







# Cornell University

## College of Arts and Sciences

### 1972-73

#### **Cornell University Announcements**

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The courses and curricula described in this *Announcement*, and the teaching personnel listed herein, are subject to change at any time by official action of Cornell University.

# Cornell Academic Calendar

1972-73

Registration, new students	Thursday, August 31
Registration, continuing and rejoining students	Friday, September 1
Fall term instruction begins, 7:30 a.m.	Monday, September 4
Thanksgiving recess:	
Instruction suspended, 1:10 p.m.	Wednesday, November 22
Instruction resumed, 7:30 a.m.	Monday, November 27
Fall term instruction ends, 1:10 p.m.	Saturday, December 9
Independent study period begins, 2:00 p.m.	Saturday, December 9
Final examinations begin	Thursday, December 14
Final examinations end	Friday, December 22
Registration, new and rejoining students	Thursday, January 18
Registration, continuing students	Friday, January 19
Spring term instruction begins, 7:30 a.m.	Monday, January 22
Spring recess:	
Instruction suspended, 1:10 p.m.	Saturday, March 17
Instruction resumed, 7:30 a.m.	Monday, March 26
Spring term instruction ends, 1:10 p.m.	Saturday, May 5
Independent study period begins, 2:00 p.m.	Saturday, May 5
Final examinations begin	Monday, May 14
Final examinations end	Tuesday, May 22
Commencement Day	Friday, May 25

The dates shown in the Academic Calendar are subject to change at any time by official action of Cornell University.

# Important Dates

## College of Arts and Sciences, 1972-73\*

	<i>Fall Term</i>	<i>Spring Term</i>
Preregistration for fall term courses, 1972		March 27, 1972
Registration, new and rejoining students	August 31, 1972	January 18, 1973
Registration, continuing students	September 1	January 19
Instruction begins, 7:30 a.m.	September 4	January 22
Deadline for submitting Independent Major requests (first meeting)	September 13	January 31
Last day for changing or adding courses without fee	September 22	February 9
Modern Language Placement examinations	October 13	February 23
Deadline for submitting Independent Major requests (second meeting)	October 18	March 20
Last day for dropping courses	October 27	March 16
Preregistration for spring term courses, 1973	October 23-November 3	
Preregistration for fall term courses, 1973		March 26-April 6
Last day for requesting leave of absence for current term	October 27	March 29
Last day for requesting permission to graduate following current term	November 1	March 1
Last day for requesting withdrawal for current term	October 27	April 10
Deadline for requesting internal transfer to College of Arts and Sciences for next term	December 1	July 1
Final examinations begin	December 14	May 14
Last day for submitting make-up grades for incompletes that are one-term old	January 22, 1973	September 10
Final examinations end	December 22	May 22
Commencement Day	December 23	May 25

\*Subject to change.





# Cornell University

## College of Arts and Sciences

The College of Arts and Sciences reflects the history and aims of the University itself. Purposeful and diverse, it is a liberal arts college, a university college, and a graduate school and research center.

The role of the liberal arts college is traditionally and properly a double one. It should further a student's understanding of himself and the world he lives in. It should prepare him, if he has the desire and talent, for further, more specialized study. All of the College's students have both opportunity and obligation to work toward that understanding; and about two-thirds of its graduates go on to graduate school.

The College of Arts and Sciences, in its second role as a university college, is responsible for the education of all Cornell students in liberal subjects. This is a taxing commitment, but a valuable one because meeting it helps to create and preserve a single academic community. At the same time, this obligation is also a source of strength and diversity that is not available to the single and solely undergraduate college. A university college, able to draw upon the more highly specialized knowledge and facilities of its more professional fellow colleges, is able to unite liberal and practical studies.

The College is also, and this is its third role, a graduate school and research institute. Teaching and scholarship are not separable activities. Their vigorous and inventive association provides inestimable advantages for undergraduates: it attracts fine minds to the faculty and keeps them professionally alert and humanly responsive; it demands first-rate facilities; and it creates an atmosphere of discovery and excitement.

This mixed character and these several functions are surely the best way to meet the obligations that higher education in America has assumed. In an American university each student must somehow receive an education that enables him to understand the world and effectively employ his talents in it; each must discover who he is and what his special interests and abilities are; each must be enabled to develop his knowledge, his interests, and his abilities; each must be helped to a sense of responsibility about himself and his work.

The College of Arts and Sciences thinks it can best meet these obligations by promoting diversity and permitting flexibility. For students this means freedom and continuity: freedom to experiment, to discover one's likes and talents, to change directions and correct mistakes; continuity so that experiment can take place without penalty, and with profit and excitement.

### The Curriculum

The College's curriculum gives the student the opportunity for breadth, experiment, and discovery, especially during the first two years. A certain diversity is indeed urged upon him by the Distribution requirement itself. There is no guarantee that a student will receive a well-rounded liberal arts education by fulfilling the Distribution requirement, but it does encourage at least a minimum involvement in the areas with which any educated person should be acquainted. When the student explores a new subject matter he is, in effect, exploring his own latent interests and abilities. As he completes introductory courses the student lays the foundation for more advanced work or even for majoring in particular fields. During his fourth term (or earlier), as his interest comes to a focus, he chooses the subject in which he wishes to concentrate his study, aiming at depth and competence. The usual pattern is for him to devote roughly half the work of the last two years to his major program. Though certain core courses are usually prescribed in any major, there still remains a broad spectrum of choice which includes related courses in other subjects or even in other divisions of the University. Some departments offer two major programs: one, a program of intense and sophisticated preparation for postgraduate study; the other, a more general program for the person who wants a liberal education with some specific concentration, but whose interests are not professional. For special programs of study which are available, please see p. 21.

Almost all departments have a full, demanding, and rewarding Honors program for those who have

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demonstrated particular ability during their first two years. Many departments have as part of their Honors programs (or in addition to them) specially directed courses and projects which permit students to pursue their own interests and talents.

The College periodically offers experimental courses that cut across subject lines, explore new notions, and test ideas arising from that complicated triangulation that must go on between teacher, student, and subject.

### Admission

The College of Arts and Sciences attempts to select a freshman class whose members are individually able to take full advantage of the educational opportunities afforded by the College and the University. Because those opportunities are rich and diverse, no single criterion is employed. The College selects primarily for what Aristotle called the intellectual virtues, and it especially considers academic ability, intelligence and creativity, independence and maturity, and promise of mental growth. It also seeks a class with a wide range of other qualities and characteristics, and it honors those young men and women with highly developed special interests and talents. Furthermore, the College is continuing its effort to identify and admit students whose schooling and family backgrounds indicate that the standard measures are a poor index of their abilities.

It is the policy of Cornell University to support actively the American ideal of equality of opportunity for all, and no student shall be denied admission or otherwise discriminated against because of color, creed, national origin, race, religion, or sex.

### COSEP Program

Under the program of the Committee on Special Educational Projects (COSEP), consideration is given to the particular problems of minority-group students who otherwise might not be able to attend a college such as Cornell. Since COSEP was organized, hundreds of minority-group applicants, mostly blacks, have been admitted to all of the University's colleges, including the College of Arts and Sciences. In addition to arranging financial aid for all students in such need, COSEP provides full-time counseling on matters ranging from the academic and social to the purely personal. Additional information about COSEP may be obtained by writing to COSEP Program, Barnes Hall, Cornell University, Ithaca, New York 14850. Inquiries concerning admission to Cornell under the COSEP program should be sent to the Office of Admissions, 247 Day Hall, Cornell University.

### Entrance Requirements

Applicants must have completed a secondary school course giving satisfactory preparation for the work of the College. *Sixteen units of entrance credit are required: four years of English; three years of college-preparatory mathematics* (the increasing need for mathematics in the social, biological, and physical

sciences makes it desirable for students interested in these areas to be prepared to take a calculus course upon entering the College; these students should have studied advanced algebra and trigonometry during their secondary school years); *and three years of one foreign language, ancient or modern.* (Foreign language preparation is particularly important in this College. Students who can offer only two years or less of a foreign language, but who have school records of otherwise high quality, should not hesitate to apply; however, they should attach a letter to their application forms explaining the deficiency.) The remaining units should be chosen from laboratory sciences, social studies, and further work in mathematics and foreign language. Whenever possible, these sixteen units should be supplemented by courses in similar academic subjects. *Exceptions to these requirements may be granted when the applicant's record is unusually promising.* For example, students whose interests and academic and extracurricular achievements are in the fields of creative and performing arts should not hesitate to apply because they have not taken a standard academic curriculum. Demonstrated unusual strength in one area may offset weaknesses in another.

Each candidate for freshman admission is required to take either the College Board Scholastic Aptitude Test (SAT) or the American College Test (ACT) and either the College Board Achievement Test in English Composition or the College Board Literature Test and two other College Board Achievement Tests in different subjects. The required tests should be taken *no later than the January test date* during their senior year. Students should request that the College Entrance Examination Board and the American College Testing Program send the results to the Office of Admissions, Cornell University.

Although an Achievement Test in a foreign language is not required for admissions consideration, candidates should, before entering Cornell, take the College Board Achievement Test in any language which they have had in high school and expect to continue in the College. Because the score on such a test is needed for placement in language courses, the test should be taken late in the senior year—in *March, May, or even July*. Candidates should also keep in mind the further language requirement which they must meet. If they will be entering with two or more years of some language which they wish to use toward fulfilling this requirement (see p. 16), they should take the Achievement Test in that language even though they do not plan to continue it in college. This score will determine whether in the tested language they have met part of the requirement for graduation.

Subject examination credit based on the results of the CEEB College Level Examination Program (CLEP) and the United States Armed Forces Institute (USAFI) will be determined by individual Cornell departments and awarded to enrolled degree candidates. Results of any or all of the examinations may be used as evidence for admission. No more than sixty hours of advanced standing credit will be accepted on the basis of these or any other college work, or any combination thereof. Please see the Advanced Placement section for additional information.

## Transfers

The College encourages transfer applications, including those of current enrollees in terminal Associate of Arts degree programs in junior and/or community colleges. All transfer applicants will be expected to have had preparatory work equivalent to that prescribed for Cornell students. Additionally, an applicant's progress in meeting the distribution and language requirements will be examined carefully. Only those students seeking sophomore or junior status will be considered for transfer admission; transfer students must have completed at least one full year of college work before matriculation in the College of Arts and Sciences. Furthermore, transfers to Cornell must spend four semesters in residence, and complete at least sixty Cornell credit hours to be eligible for a degree.

Normally, action on completed transfer applications will be announced by January 1 for spring term admission, and June 1 for fall term admission.

Transfer applicants should refer to the brochure *Transfer to Cornell University* for further instructions.

A student seeking admission to the College of Arts and Sciences from some other undergraduate division of Cornell must first complete a year of successful study in that division.

## Part-Time Student Program

The College of Arts and Sciences has a part-time degree-granting program for Ithaca area adult residents who are above normal college age. (The accepted guideline is twenty-three years of age or older.) The program is designed as a service for locally employed residents. Spouses of employed persons are automatically included for admission consideration. Up to twenty-five persons will be enrolled each semester in this program.

Applicants to the program are expected to possess the admissions credentials outlined above, although exceptions will be made where extenuating circumstances exist. Although an enrollee in the program can begin the Arts and Sciences degree program with freshman status, up to sixty semester hours of previous college work may be accepted in transfer credit toward the Cornell degree. Once registered in the program, the part-time student is expected to make continuous progress toward the completion of the degree requirements. Up to ten hours of credit may be taken per semester. Current or past Arts and Sciences full-time students are not eligible for part-time status except upon permission granted by a special petition to the Committee on Academic Records.

Part-time degree students will be required to complete all normal academic degree requirements of the College with the exception of the full-time residency stipulation.

## Special Students

Each year a number of Special Students are enrolled in the College. These students must enroll in at least twelve credit hours per semester, and they are limited

to two terms of residence. Under special circumstances, students may spend their senior year at Cornell while earning a degree at another institution. Special Students must have a compelling reason for studying at Cornell. They may not transfer to degree-candidate status.

## Early Admission

A few students request admission after only three years of secondary school. Some of these students receive high school diplomas for completing all requirements in three years; others leave school lacking one or a few credits. The Admissions Committee looks most favorably on those students who have exhausted their secondary school offerings and who show the maturity to profit from entering college early. Those students who have the opportunity to take advanced, accelerated, or college-level courses during their fourth year in secondary school are usually encouraged to do so unless this action would inhibit the development of some other academic strength. Students applying for Early Admission are encouraged to write or to make an appointment for an on-campus interview to discuss their reasons and plans.

## Delayed Enrollment

The College of Arts and Sciences recognizes that some students may benefit from time away from formal schooling. In this spirit, the College officially confirms the practice of delaying one's first enrollment in the College by either two or four semesters. To participate, accepted freshman candidates must inform the University Office of Admissions by May 1 that they accept the offer of admission and wish to petition for a delay. The request should specify the student's plans and state whether the delay will be for two or four semesters. If the College approves the request, the student will remit the \$50 registration fee and will be assured that a place is reserved for a specified future freshman class.

After an approved delay, students are required to inform the College of their desire to enroll at least six weeks prior to the start of a semester.

## Application

Application forms may be obtained from the Office of Admissions, 247 Day Hall, and all communication concerning admission should be directed there. Freshman applicants are considered for admission for the fall term only. Freshman applications must be returned to the Office of Admissions by January 15. Transfer application deadlines for fall and spring term admission consideration are March 15 and November 1, respectively. Special Students' and part-time candidates' applications must be submitted by December 1 for spring term admission and by July 1 for fall term admission.

## Advanced Placement

Advanced placement and advanced placement credit may be achieved by an entering freshman in a variety of subjects and in a variety of ways. Advanced place-

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ment will be awarded whenever a student's record, or his examination scores, or both, indicate that he has earned it.

When his advanced placement credit totals fifteen or more hours, a student may wish to accelerate his graduation date one or two terms. It is not always wise to accelerate. Therefore, the student should consider his situation carefully and consult with his adviser. If he wishes to pursue the possibility of acceleration, the student should present a coherent plan of study to the Dean's Office, 142 Goldwin Smith Hall, for approval. For more information see Acceleration, p. 17.

Advanced placement credit is not normally used to reduce a term's program, but it may be used to make up a credit deficiency caused by illness or other necessary absence. Advanced placement credit may sometimes be used to satisfy some Distribution requirements. Essentially, advanced placement and advanced placement credit represent a saving of time; they open a number of possibilities in addition to acceleration. They may enable the student to broaden his education through a wider choice of elective courses. They may permit him to pursue his major more intensively and even to take graduate courses while an undergraduate. They may allow him at some point to lighten his formal course load in favor of informal or independent study.

Both advanced placement and advanced placement credit may be earned by high attainment on the College Board Advanced Placement Examinations. Also, advanced placement and/or credit may be earned by high attainment on departmental examinations given usually during Orientation week; by means of CLEP examinations; and by means of college work completed before matriculation at Cornell. Detailed descriptions of requirements for advanced placement and/or credit follow.

Placement and credit on the basis of the College Board Advanced Placement and for CLEP Examinations will usually be determined during the summer, and the student will be notified at registration so that he can make appropriate course choices. Freshmen who take departmental placement examinations during Orientation week will be notified of placement in time to register for the proper courses. Freshmen who submit transcripts of college work, including work at Cornell, to the Advising Center, 137 Goldwin Smith, sufficiently early during the summer will be notified of placement and/or credit at registration.

With a few exceptions the awarding of credit in a subject is not conditional upon a student's continuing his study of that subject at Cornell. Although the credit is in nearly all cases recommended by the faculty of the College of Arts and Sciences, it is recognized in any of the undergraduate divisions of the University.

### Biological Sciences

A student with a score of 5 on the Advanced Placement Examination (ETS, Princeton, New Jersey) in biology or a student with a superior performance on a special departmental examination will receive eight credits and be permitted exemption from all introductory biology courses, including Biological Sciences

105. If he completes Biological Sciences 105, he will receive an additional four credits. A student with an Advanced Placement score of 3 or 4 may take Biological Sciences 105. Completion of Biological Sciences 105 and a score of 3 or 4 will result in seven credits. No student will be given credit or standing with a score of 3 or 4 on the Advanced Placement test. Any student may, at his option, take whatever introductory biology course is appropriate to him.

Those wishing to take the departmentally administered examination should request permission from the General Biology Office, 310 Roberts Hall (256-2031). The examination is usually given early in the fall orientation period. Credit for work completed at other colleges before admission to Cornell will be decided on an individual basis. A student wishing such consideration should contact his college office and the Division of Biological Sciences.

Advanced placement with a score of 3 or 4 plus Biological Sciences 105; or advanced placement with a score of 5 fulfills the Biological Sciences Distribution requirement.

### Chemistry

The Department of Chemistry offers three two-term introductory sequences that satisfy prerequisites for further work in the Department—a six-hour sequence in general chemistry (Chemistry 103-104), a seven-hour sequence which includes qualitative analysis (Chemistry 107-108), and a nine-hour sequence which includes both qualitative and quantitative analysis (Chemistry 115-116). The college-level chemistry course offered by some secondary schools corresponds roughly to Chemistry 107-108. CBA and CHEMS are not considered sufficient preparation for advanced placement.

A freshman may qualify for advanced placement and seven hours of advanced placement credit for Chemistry 107-108 with a score of 5 on the Advanced Placement Examination in Chemistry or by passing a special examination available from the Department of Chemistry. Before taking the special examination, a student must consult with Professor M. J. Sienko (chemistry). A score of 4 or 3 on the Advanced Placement Examination earns three hours of advanced placement credit for Chemistry 107 and advanced placement in Chemistry 108. However, students receiving advanced placement credit for Chemistry 107 who are interested in chemistry or a related science major should consider taking Chemistry 115-116 and should consult with Professor R. R. Rye, Department of Chemistry.

### Economics

The Department of Economics will grant six hours of advanced placement credit to a student who scores 600 or higher in the CLEP examination, Introductory Economics. Such a student will be admitted to courses for which Economics 101-102 is a prerequisite.

### English

For exceptionally well-qualified freshmen, the Department of English will recommend six hours of ad-



vanced placement credit, and freshmen for whom such credit has been recommended will also be eligible for intermediate courses in English and American literature. The Department's decision to recommend advanced placement credit will be based on the student's performance on the College Board Verbal Test, the College Board English Composition or Literature Achievement Test, the College Board Advanced Placement Examination in English (when the student has taken it), and on the student's secondary-school grades, including his grade in any advanced placement (or "honors" or "enriched") course he may have taken—not necessarily in this order. The Department will not exclude from consideration for advanced placement credit the student who has not taken an advanced placement course or the College Board Advanced Placement Examination in English, nor will it base a decision to recommend advanced placement credit on any one piece of evidence—such as a score on the Advanced Placement Examinations—alone.

Advanced placement credit awarded in English may not be used to satisfy the Freshman Seminars requirement or the humanities Distribution requirement.

### History

The Department of History will recommend three hours of advanced placement credit for History 106 for those entering students who receive a score of 5 or 4 on the College Board Advanced Placement Examination in European History and complete History 105 with a grade of B— or above. Students in the College of Arts and Sciences who are recommended for credit may complete the Distribution requirement in history by taking History 105. Credit cannot be given for both semesters because the College Board Advanced Placement Examination does not include enough of the material covered in History 105.

The Department of History will recommend six hours of advanced placement credit for History 215–216 (Survey of American History) for those entering students who receive scores of 5 or 4 on the College Board Advanced Placement Examination in American History.

Both of these courses are significantly different from courses with similar titles in secondary school. They differ in subject matter, in the use of sources, and in their emphasis on the use of the historian's skills and outlook. Therefore, the student who intends to major in history or in the humanities or social sciences should take History 105–106 or History 215–216 as a preparation for upperclass work. If he does so, he may receive credit for the course in addition to the advanced placement.

### Languages

Since a usable command of a foreign language is considered an indispensable part of a liberal education, every student in the College of Arts and Sciences must achieve Proficiency in a single foreign language, or alternatively, a somewhat lower level of Qualification in two languages, either classical or modern.

**A. Classical Languages.** Placement in freshman Latin courses other than beginning Latin is determined by an examination administered by the Department of Classics during Orientation Week. Tentative placement

is made on the basis of previous training: two units of entrance credit for Latin 108; three or four units of entrance credit for 207.

Entering freshmen who have passed the College Board Advanced Placement Examination in Latin with a score of 3 or better will be permitted to register for Latin 215, will be given six hours of advanced placement credit, and will be considered to have satisfied the language requirement.

**B. Modern Foreign Languages.** If a score of 700 or above is attained in the CEEB examination, the student is eligible to take the Advanced Standing Examination administered by the Department of Modern Languages and Linguistics. The student is placed in the appropriate language course on the basis of performance in this exam; advanced standing credit (see below) may also be awarded on this basis. See also p. 91.

Advanced credit, which may be used towards satisfaction of the language requirement (see p. 16), may be entered on the student's record as follows.

Credit for advanced standing is granted to incoming freshmen as follows:

- (a) For high school work, credit is granted only for the equivalent of 200-level courses (three to eight hours).
- (b) For college work (or substantial independent study) during high school years, credit is granted for work on any level.

Credit in the above cases is awarded according to performance on the CEEB achievement (700 or more), Advanced Placement (a score of 4 or 5 on the language exam = 3 hours credit), Cornell Advanced Standing Examination, or special examination. Recommendation for credit is forwarded from the appropriate faculty member to the Dean's Office.

Credit for language work at the college level (including summer study and study abroad) is granted as follows:

- (a) For formal work at an accredited college, credit is granted by the registrar or college office and entered on the student's transcript.
- (b) For summer study here or study at any time abroad the student must petition in advance for transfer of credit in the usual way, i.e., with the permission and recommendation of the appropriate professor.

**C. Modern Foreign Literatures.** The Advanced Placement Examinations taken in high schools are read in the various literature departments at Cornell. Based upon the merit of the examination, advanced credit and advanced placement can be granted. Results are available, at the beginning of the year, from the appropriate department (German, Russian, or Romance Studies for French, Italian, and Spanish).

**D. Semitic Languages and Literatures.** Students with four units of entrance credit in Hebrew may be admitted to Hebrew 301 upon presentation of appropriate evidence (e.g., a score of 650 or above on the CEEB), or by departmental examination. Such a student will also receive five hours of advanced placement credit in Hebrew. If a student shows evidence of knowledge beyond Semitics 301, he may receive eight hours of advanced placement credit in Hebrew.

In Arabic, advanced placement credit may be granted to students who have had courses in literary Arabic in

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accredited institutions before coming to Cornell, or who pass a departmental examination.

### Mathematics

The Cornell calculus sequences discussed below are described under "Basic Sequences" in the Mathematics section of this *Announcement*.

The regular freshman calculus courses at Cornell do not differ substantially from calculus courses given in many high schools, and it is best to avoid repeating material that has already been covered at an appropriate level. A secondary school student who has had the equivalent of at least one semester of analytic geometry and calculus should, if possible, take one of the College Entrance Examination Board's two Advanced Placement Examinations during his senior year. Students taking these examinations will automatically be offered advanced placement as detailed below.

The placement examination in mathematics offered at Cornell just before the beginning of classes in the fall should be taken if the student:

1. had at least a semester of calculus but did not take a CEEB examination; or
2. received a 2 on the BC exam or a 3 on the AB, and wishes to enter the upper sequence; or
3. believes that the placement assigned on the strength of the CEEB examination is not high enough in his case. The student is strongly urged to take the placement test even if he feels that his grasp of the material is uncertain. Grades on placement examinations do not become part of a student's record, and the Cornell examination is given only at the beginning of the year.

A student entering the upper sequence who has a firm grounding in the first semester of calculus but cannot omit the second may, with the consent of the Department, take 122 and 221 simultaneously in his first semester. Thus, if 222 is taken in the second semester, he will have completed the sophomore course by the end of his first year.

The standard sequence 111–112–213 is arranged so that students in it can progress as fast as they desire. Anyone wishing to begin work on this material before his arrival at Cornell may write to the Mathematics Department for a list of topics.

Students with a grade of 4 or 5 on the BC exam, will be placed in the appropriate third-semester course (293, 221, or 213) though students entering 293 or 213 may have to make up some material on partial differentiation. Students with a 3 on the BC exam, or a 4 or 5 on the AB, will be placed in the appropriate second-semester course (192, 122, or 112). Students with a 2 on the BC exam, or a 3 on the AB, will be placed in 192 or 112. Advanced placement credit will be awarded appropriately. A grade of 3 or higher on the BC exam satisfies the Distribution requirement in mathematics.

### Music

Prospective freshmen and transfer students wishing to apply for advanced placement in music should consult the chairman of the Department as early as possible, preferably concurrently with their applications for ad-

mission. Arrangements will then be made for a comprehensive examination in theory, administered by the Department of Music. Depending upon the results of this examination, the student's musical ability, and his background in music, a student may receive advanced placement credit for Music 151, 151–152, or, in exceptional cases, Music 251–252. These courses in basic theory are required for the major in music, and they are prerequisites for most of the advanced music courses.

### Physics

Four different introductory physics sequences are open to freshmen: Physics 101–102 (4–4 credit hours), 112–213–214–315 (4–4–4–3 credit hours), 201–202 (3–3 credit hours), and 207–208–301 (4–4–3 credit hours). Advanced placement and credit are offered in one or more courses in each sequence except the 201–202 sequence. Physics 101–102 has a prerequisite of three years of college-preparatory mathematics. Physics 112 and 207 each have a prerequisite of calculus (the equivalent of Mathematics 191 or 111), and additional mathematics is prerequisite for the sequel physics courses. Physics 101–102 may be appropriately taken as a terminal physics course. Physics 207–208 may be terminal, but is essentially limited to classical physics; study of contemporary physics is delayed for course 301. For a three- or four-term introductory sequence, courses 112–213–214 and 315 are recommended, especially for physics major students and for students in the engineering college. (Physics 201–202 is specifically designed for students who do not intend to major in any science; this course does not prepare the student for any more advanced course in science.)

Entering freshmen who have scored well on the College Board Advanced Placement Examination in Physics are considered for advanced placement and credit. There are two levels of this examination—one with and one without calculus. The examination level (or, in some cases, the score in the Advanced Placement Examination in Mathematics) will determine the appropriate physics course for consideration. Finally, a personal interview with a physics faculty member designated by the chairman of the Department of Physics is required before advanced placement is granted. Just before the beginning of classes each fall term the Department of Physics administers a special examination for suitably prepared students who did not have the opportunity to take the College Board Advanced Placement Examination. Suitable preparation for this special examination consists of two years of secondary school physics, including an "advanced placement" course or its equivalent.

It is not necessary for the student to continue the study of physics in order to qualify for advanced placement credit. In rare instances, a student who is not recommended for credit may be allowed to take the next-in-sequence course.

Transfer students who submit physics course credit received at another college should consult with the chairman of the Department of Physics, or his delegate, for advice concerning placement in the Cornell physics program.





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### Psychology

An entering freshman who has scored well on the CLEP psychology test may receive advanced placement credit in psychology. A student interested in taking further courses in psychology should consult with his adviser or a faculty member in the Department.

Advanced credit based on the CLEP test may not be used to satisfy the Distribution requirement. Credit toward the requirements of a major in psychology will depend upon the recommendation of the major adviser.

### Sociology

The Department of Sociology will recommend three hours of advanced placement and credit for students who receive the equivalent of a B on the CLEP sociology examination and whose essay questions are considered acceptable by the Department. Students receiving advanced placement will be considered to have completed Sociology 101, to have finished one-half of the Distribution requirement in Sociology, and to be qualified for placement into advanced courses for which Sociology 101 is a prerequisite.

### Transfer Credit

A student admitted to the College of Arts and Sciences from another college of Cornell University, or from any other institution of collegiate rank, will receive credit toward the degree of Bachelor of Arts for the number of hours to which his record may, in the judgment of the faculty, entitle him. Ordinarily the total may not exceed sixty hours, and no more than fifteen hours may be in courses not commonly given by the College of Arts and Sciences. In order to obtain the degree of Bachelor of Arts, a student should have been in residence at least two years as a candidate for that degree in the College of Arts and Sciences and during those two years successfully completed at least sixty hours of courses, although exceptions may be granted in unusual cases. (See also Residence, p. 14, and Credit, p. 15.)

### Advising

The Academic Advising Center, 137 Goldwin Smith Hall, will assign an adviser to each freshman. Advisers will meet with their advisees early in the fall term to review students' interests and class schedules. During the year, advisers and advisees will follow a schedule that seems convenient to them—personal conferences or group sessions with other students. Advisers will assist students in the choice of studies, advise them during the term regarding their work, introduce them to the academic life of the College, and provide some help with personal problems and the choice of a career. However, all students are expected to show initiative in planning their programs and seeking advice, and to assume a large measure of responsibility for their progress in meeting requirements for the degree. Students may change advisers if they wish.

In following years, students may keep their freshman advisers, find new underclass advisers, or sign up with their intended major departments. The major

adviser will guide the student in the selection of courses, counsel them on matters affecting their academic work, and supervise their progress toward the degree.

As a supplement to faculty advising, the Center acts to help undergraduates with their programs and problems, and to assist them in making plans for graduate or professional study.

### Registration in Courses

During a designated period each term, a student will, with the aid of an adviser, prepare a program of studies for the following term. Preregistration dates for 1972–73 are listed below.

March 27–April 7, 1972, for fall term, 1972

October 23–November 3, 1972, for spring term, 1973

March 26–April 6, 1973, for fall term, 1973

A student who does not preregister for a term but wishes to continue in the College may, upon payment of the \$10 fee, submit a schedule within the first two weeks of that term. Any student who is not registered in courses within the first two weeks of a term will be withdrawn from the College. Students must register with both the College and the University.

Every student must register for at least twelve academic hours (exclusive of basic military training and physical education) each term. In order to maintain satisfactory progress toward a four-year degree, a student's program should average fifteen hours per term. However, students may start their careers with the minimum number of hours per term and still graduate in eight terms by taking additional credits in the junior and senior years. No student may register for more than eighteen or fewer than twelve hours without special permission. A student seeking such permission or approval of a plan to graduate in fewer or more than eight terms should consult a member of the Academic Advising Center.

Changes in preregistration will be permitted, without permission or fee, upon recommendation of the student's adviser during the first three weeks of instruction each term. After the first three weeks of instruction any change will be subject to a \$10 fee and must have the approval of the Academic Advising Center. Except in unusual circumstances, students will not be allowed to add a course after the first three weeks of classes. After October 27 (for the fall term, 1972) and after March 16 (for the spring term, 1973) a course may be cancelled for medical reasons only. See the calendar on p. 5.

Freshmen will learn about registration procedures in early July from the Academic Advising Center.

### Requirements for Graduation

#### Residence

A candidate for the degree of Bachelor of Arts should be in residence during the last two terms preceding graduation, and must have been in residence for at least two years. Within those two years

he will normally have completed at least sixty hours as a degree candidate in the College of Arts and Sciences. Students normally spend eight terms in residence and may not exceed this length of time without the permission of the Committee on Academic Records. Students in good standing who leave their degrees in abeyance should not expect a request for reinstatement to be considered favorably after five years.

## Credit

For the degree of Bachelor of Arts, a candidate must have earned credit for at least 120 hours. Students may take as many out-of-College courses as they wish, as long as they successfully complete at least 100 hours in courses taught in the College of Arts and Sciences. Students are expected to complete at least 100 hours with grades of C (not C—) or better. If a student's record is such that achievement of this standard seems unlikely, the Academic Records Committee may take academic action, since the student will not be making satisfactory progress towards the degree.

There are certain courses taught outside the College which may be counted as part of the 100 hours. These include courses that are specified as meeting the requirements of the student's major program, and certain courses offered by the Africana Studies and Research Center. For information about specific courses, the student should consult the Dean's Office, 142 Goldwin Smith Hall.

The College does not grant credit for all courses offered by the University. (For example, the College does not grant credit for typing, shorthand, remedial reading and writing.) Although a student may take any of these courses, they will not be considered as part of the A.B. degree. Again, the Dean's Office can provide information about specific courses. Students are advised to check with that Office before counting out-of-College courses towards the degree. Basic courses in military, naval, or air science or in physical education may not be counted toward the 120 hours. Students who matriculated in the College in 1968 or before may earn as many as 12 hours of credit in advanced military courses. These hours may be counted for such students towards the 120 hours needed for graduation, but cannot be counted under any circumstances towards the 100 hours that need to be taken inside the College. Students who entered in 1969 or after may not count any military science courses toward the 120 hours required for the Bachelor of Arts degree. However, military courses may be taken as electives, without credit, and used in satisfaction of requirements for officer's candidacy and for the awarding of army, navy, and marine, or air force scholarships.

## Advanced Placement and Transfer Credit

See pp. 9–14.

## Summer Session Credit

Summer session study serves various purposes: contributing to a plan of acceleration (see p. 17); satisfying the prerequisite for a course given during

the regular college year; gaining knowledge of some special subject matter; enlarging one's choice of electives; and exploring new interests. The College values and encourages these efforts. Cornell Summer Session courses, taken after Summer Session 1969 and approved by the appropriate departments of the College of Arts and Sciences, automatically appear on a student's permanent record card in the College as well as on his official University transcript.

The selection of summer courses should be discussed with and approved by the student's adviser beforehand. The summer session card showing courses to be taken and bearing the adviser's signature must be filed in the Dean's Office, 142 Goldwin Smith Hall. Credit toward graduation will be granted upon satisfactory completion of the course. A student taking non-Cornell summer session courses must petition for credit. The appropriate forms are available in the Dean's Office, and they should be completed and returned to that Office before a student enrolls for summer study. The use of summer session credit to complete a September degree is permitted only for students who have prior permission from the Committee on Academic Records or the Committee of Deans.

Summer courses may be taken before matriculation, but the granting of credit will be subject to approval by the appropriate Cornell departments. If credit is sought for such courses, the student should have his transcript sent to the Academic Advising Center, 137 Goldwin Smith Hall, during the summer before he matriculates. An entering student who plans to graduate in fewer than four years is encouraged to enroll in summer school courses at Cornell in the summer before his freshman year and should plan his program in consultation with the Advising Center.

## Credit by Examination

See Admissions, p. 8, and Advanced Placement, pp. 9–14.

## Other Requirements

*A student may not use the same course to fulfill more than one College requirement, with two exceptions. First, a course may be used for fulfillment of a College requirement and for fulfillment of a major requirement, provided the major department agrees. Second, a one-semester course in foreign literature that is acceptable as a means of achieving Proficiency in that language and also as partial fulfillment of the Distribution requirement in the humanities may be used for both purposes. Courses used to fulfill College requirements may be taken on an S-U basis (see Grades and Academic Standing, p. 18).*

## A. Freshman Seminars

A student is required to complete in each term of his freshman year one of the courses specially designed to provide writing experience and to introduce him to a particular discipline in the framework of a small class experience. The two courses need not be in the same subject but they must be designated as meeting this requirement. (For details, see p. 29.)

A course used in satisfying the Freshman Seminars requirement may not be used in satisfying the Dis-



## 16 Requirements for Graduation

tribution or the language requirement. Superior College Board Achievement and Advanced Placement Test results do not allow exemption from this requirement. Foreign students who take English 211–212 may satisfy the Freshman Seminars requirement by taking two of the listed seminars offered by the humanities departments (English, History, History of Art, Classics, Philosophy, Romance Studies, Russian Literature, German Literature, Comparative Literature and Medieval Studies). Foreign students will thereby have also satisfied the Distribution requirement in the humanities or in the expressive arts.

### B. Foreign Language

The language requirement can be met (1) by attaining Qualification in two languages; or (2) by attaining Proficiency in one language.

**Qualification in modern foreign languages** can be achieved in any of four ways: (a) successful completion of course 102, 134, or, in the case of transfer students, any first-year college course; (b) by a score of 560 or more on the reading portion of the College Entrance Examination Board (CEEB) Achievement Test; (c) by special examination administered by staff members of the Department of Modern Languages and Linguistics in cases where no CEEB tests exist; (d) three or more years of high school study in one or more languages.

**Proficiency in modern foreign languages** can be achieved in either of two ways: (a) successful completion of a three-hour course at the 200-level or above for which Qualification is a prerequisite (excluding Freshman Seminars) or, in the case of transfer students, any advanced course; (b) advanced placement credit equivalent to (a). (See p. 11.)

**Qualification in Semitic and Classical languages** can be achieved in any of four ways: (a) successful completion of Semitics 201 (Hebrew), Semitics 203 (Arabic), Greek 103, Latin 108; or, in the case of transfer students, any three-semester college course; (b) by a score of 560 or more on the reading portion of the College Entrance Examination Board (CEEB) Achievement Test or, in Hebrew, a CEEB score of 500 or a Regents' score of 90; (c) by special examination administered by staff members of the Departments of Classics and Semitic Studies in cases where no CEEB tests exist; (d) three or more years of high school study in one or more languages.

**Proficiency in Semitic and Classical languages** can be achieved in either of two ways: (a) successful completion of Semitics 202 (Hebrew), Semitics 204 (Arabic), Greek 203, any three-hour Latin course beyond 108; or, in the case of transfer students, any advanced course; (b) advanced placement credit equivalent to (a). (See p. 11.)

If the language being offered for Qualification or Proficiency is not taught at Cornell the student may arrange for examination through the Academic Advising Center. CEEB tests are administered at Cornell by the University Guidance and Testing Center, 203 Barnes Hall, prior to fall registration and in December, January, May, and August.

For placement in language courses, see p. 91.

### C. Distribution

Each student must complete six hours of related course work in four of the seven groups listed below, including one six-hour sequence in the physical or biological sciences, one in the social sciences or history, and one in the humanities or expressive arts. The fourth group may be six hours of related course work in mathematics or in a group not previously elected. A student may not use the same course to satisfy more than one requirement.

The policy of the College is to encourage students, where possible, to satisfy the Distribution requirement with advanced rather than basic courses, and to use the Distribution requirement as an opportunity to explore new areas at any time during their college careers. Most students tend to complete this requirement during their first two years, however, precisely because those are the years of exploration of various subjects, and because a basic course taken in satisfaction of the Distribution requirement will ordinarily qualify him for admission to a major in that field.

The faculty of the College has authorized the Dean's Office to waive one or two of the four distribution requirements for a student taking an equivalent number of courses in the Africana Studies and Research Center. One requirement may be waived automatically upon the student's written request; a second may be waived at the discretion of the Dean's Office upon petition by the student. The area of waiver is to be determined by the Dean's Office. Language courses and courses used to satisfy the Freshman Seminars requirement may not be counted in the "equivalent number of courses" in the Center, referred to above. The second waiver is to be granted only to those students who demonstrate a real burden of academic requirements by virtue of their taking a large concentration of work in the Center as well as a major in the Arts College, in effect, a double major. Africana Studies courses cannot be used to waive the natural science requirement.

The specific courses which satisfy each of the seven categories of the Distribution requirement are listed below.

**1. Mathematics.** Any six hours in mathematics, not including more than one course from among 105, 107, 303; or by the sequence Computer Science 201 and Electrical Engineering 4110 (College of Engineering).

**2. Physical Sciences.** *Astronomy:* 101–102. *Chemistry:* 103, or 107, or 115, and 104, or 108, or 116. *Geological Sciences:* 101–102. *Physics:* 101–102, 201–202, 207–208, 112–213 or by the first term of any of these sequences followed by the second term of another. Physics 201–202 is particularly designed for students who do not expect to do further work in any branch of science.

**3. Biological Sciences.** 101, 101L and 102, 102L; 107–108; advanced placement with a score of 3 or 4 plus Biological Sciences 105; or advanced placement with a score of 5.

**4. Social Sciences.** *Anthropology:* any two courses totaling six hours (archaeology not included). *Economics:* 101–102. *Government:* any two of the

following: 101, 104, 203, 206. *Linguistics*: 201–202, or the combination of Linguistics 201 and any other course for which Linguistics 201 is a prerequisite. *Psychology*: any two courses in Psychology (Human Development 115 and Rural Education 110 may be counted). *Sociology*: any two courses totaling six hours.

**5. History.** Any year course, through 300-level courses.

**6. Humanities.** *Asian Studies*: any 300-level courses listed under Asian Literature totaling at least six hours which form a sequence. *Classics*: (a) any two courses in Greek beginning with 201 or in Latin beginning with 207 that form a reasonable sequence; (b) two of the following: Classical Civilization 119, 120, 121, 122 (unless used for Freshman Seminars requirement), 200, 220, 319, 320; Comparative Literature 313, 314, 323, 340, 400. *Comparative Literature*: any two 200- or 300-level courses which form a sequence. *English*: any two courses in English at the 200-level or above, other than 203–204, 205–206, 305–306, 385–386, 387–388, 485–486, 488 and 489, but a student may not enroll in both 251 and 255, or in both 252 and 256. *Modern Foreign Languages*: (a) French: 201 and 202E. (b) German: any two literature courses at the 200-level or above. (c) Italian: 201–202. (d) Russian: any two Russian literature courses at the 200-level or above. (e) Spanish: any two of the following courses: Spanish 201, 311, 312. *Philosophy*: any two courses in Philosophy with the following exceptions: (a) Philosophy 100 if used in satisfying the Freshman Seminars requirement; (b) a combination of two introductory courses, 100 and 101; (c) a combination of two courses in formal logic such as 212, 412, 413, and 419. *Semitic Literature*: any two courses at the 200-level or above.

**7. Expressive Arts.** *English*: any two of the following: English 203, 204, 205, 206, 305, 306, 385, 386, 387, 388, 485, 486. *History of Art*: any two courses at the 200-level or above. *Music*: any courses totaling six hours; a maximum of three hours may be used in courses 331–338 and 441–444. *Theatre Arts*: any two of the three or four credit courses.

## D. The Major

Each student must satisfy the specified requirements of the major as listed by his major department. Some majors require courses in related subjects outside the major department. Independent Majors must fulfill those requirements outlined for them by the Independent Major Board (See Independent Major Program, p. 22.)

## E. Physical Education

During the first four terms of residence each student must complete the University requirement of four terms of work in physical education. The courses in physical education are described in the publications which the Department of Physical Education makes available to students at registration. Students are automatically registered for physical education by that department until their requirement has been completed.

**Possible Excuses and Postponements for Physical Education.** 1) Medical: The Academic Advising Center must receive a letter of recommendation from the

Gannett Clinic. The Clinic may recommend either a postponement or an excuse for the term. 2) Self-help employment: A student working at least twenty hours a week may apply to the Financial Aid Office for an excuse for the current term. The student must prove financial need in addition to working twenty or more hours a week. 3) Military service: The entire requirement is excused for veterans. 4) Age: If a student is at least twenty-two years of age when entering the University, he or she can be excused. 5) Married women: A married woman may request a permanent excuse.

Students should come to the Academic Advising Center regarding any possible excuse or postponement of this requirement.

## F. Electives

Of the required 120 hours, each student must complete fifteen hours in courses not offered in satisfaction of requirements (A) through (E) above, and not given by the department supervising the major.

## Petitioning

Students who, because of extraordinary circumstances, wish to petition for a waiver of the above requirements, should consult a member of the Academic Advising Center, 137 Goldwin Smith Hall.

## Acceleration

Most students spend eight terms of residence in the College before they graduate, but under special circumstances some are awarded the Bachelor of Arts degree at the end of six or seven terms. Students may, for example, have so much advanced placement credit that they enter Cornell with the equivalent of a term's study behind them, or may be sufficiently qualified to start taking a significant number of advanced courses while still an underclassman. A student who matriculates with fifteen hours or more of advanced placement credit may inquire at the Academic Advising Center early in the freshman year about the option of accelerating.

An underclassman who does not have fifteen hours or more of advanced placement, but who wishes to graduate in fewer than eight terms and has a plan for acceleration that makes educational sense, should make an appointment with one of the members of the Academic Advising Center as early in his or her academic career as possible. Finally, a petition requesting permission to accelerate must be submitted.

Upperclassmen who have planned their courses so that they can finish the College requirements and the major requirements ahead of the scheduled graduation date, and who have the support of their advisers and the chairmen of their major departments, may also petition to graduate early. Before submitting petitions for acceleration, they should make an appointment with one of the members of the Academic Advising Center. Ideally, an acceleration plan should be thought out and submitted at the time the student chooses his major field. In rare cases, a plan will be approved during the term before the proposed graduation date. In these cases, the deadline for submitting the plan

## 18 Grades and Academic Standing

is the last day in that term for adding or dropping courses without fee.

Each request to accelerate is reviewed by the appropriate College committee, which decides whether or not acceleration is in the student's best academic interest. Coherent educational plans are viewed most favorably; the mere ability to complete requirements quickly is not sufficient. A petition to graduate early will not be approved unless a student has achieved and maintains a decent academic record, or unless the committees feel that the educational program proposed represents a coherent liberal arts education. The petition forms, available in the Dean's Office, 142 Goldwin Smith Hall, list some of the criteria used by the committees. It is essential that any student considering graduating in fewer than eight terms consult the Academic Advising Center, 137 Goldwin Smith Hall, about meeting these criteria.

Students who change their mind after a request for acceleration has been approved, and decide not to graduate early, must so inform the Dean's Office, 142 Goldwin Smith Hall, in writing, by the last day of the examination period before his accelerated graduation date.

See the section, Credit for Summer Session, p. 15.

### Bachelor of Arts with Distinction

The degree of Bachelor of Arts with distinction in all subjects will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, (1) have completed at least sixty credit hours while registered in regular session in the College of Arts and Sciences; (2) have received the grade of B— or better in at least three-fourths of the total number of hours taken while registered in this College; (3) have received the grade of A— or better in at least one-half of the total number of hours taken while registered in this College; (4) have received a grade below C— in no more than one course; (5) have received no failing grade.

### Bachelor of Arts with Honors

The degree of Bachelor of Arts with honors will be conferred upon those students who, in addition to having completed the requirements for the degree of Bachelor of Arts, have satisfactorily completed the Honors program in their major subject and have been recommended for the degree by the department representing their major subject or by the Independent Major Board.

Honors programs are designed to free the exceptionally promising student for a substantial portion of his time from the ordinary requirements of academic courses in order that he may be able to broaden and deepen his understanding of the field of his special interest, to explore branches of his subject not represented in the regular curriculum, and to gain experience in original investigation. A candidate for the degree of Bachelor of Arts with honors is usually required to pass a comprehensive examination in his major subject or to submit a thesis or some other

satisfactory evidence of capacity for independent work. He may receive the degree with honors at one of three levels: *cum laude*, *magna cum laude*, or *summa cum laude*. When performance does not justify a degree with honors, the student may receive course credit toward the degree of Bachelor of Arts.

A student who, after admission to Honors, is found to be unsuited to Honors work, will revert to candidacy for the regular Bachelor of Arts degree.

## Grades and Academic Standing

Passing grades for courses range in a descending order from A+ through D—. F is a failing grade. No credit toward graduation will be given for a course in which a failing grade has been received, unless the course is repeated and a passing mark received.

Final grades A+, A, A— mean *excellent to very good*: comprehensive knowledge and understanding of subject matter, marked perception and/or originality; B+, B, B— mean *good*: moderately broad knowledge and understanding of subject matter, noticeable perception and/or originality; C+, C, C— mean *satisfactory*: reasonable knowledge and understanding of subject matter, some perception and/or originality; D+, D, D— mean *marginal*: minimum of knowledge and understanding of subject matter, limited perception and/or originality; F means *failing*: unacceptably low level of knowledge and understanding of subject matter, severely limited perception and/or originality.

Final grades of S or U may also be given in some courses. S means the student receives the credit specified for the course; U means no credit will be given. Unlike the grades A+ through F, the grades S and U are not used in calculating a student's grade average. Students should consult individual instructors for their definitions of S and U.

An undergraduate registered in the College, after consultation with his adviser, may elect to receive a grade of S or U instead of one of the letter grades (A+ to F) in one academic course a term provided that the instructor is willing to assign such grades.

There is one main restriction on the use of S-U grades: courses which will count toward the satisfaction of the student's major requirement should not be taken on an S-U basis unless the department grants permission. A student may elect the S-U option in courses used to satisfy Distribution and language requirements provided that such courses do not also count toward his major requirement or serve as prerequisites for admission to a major field. Students who intend to apply to graduate school or for transfer to another college are advised to use the S-U option sparingly. S-U grades in teacher preparation courses are not recommended.

Students who elect the S-U option in a course must file a permission card with the Scheduling Office, 134 Goldwin Smith Hall. No change in grading option can be made after the first two weeks of any term.

In certain courses, deemed by the College to require no greater precision of grading, all final grades will be S or U. Such exclusive S-U courses are listed in





## 20 Leaves of Absence and Withdrawals

the *Announcement or Supplementary Announcement* as "S-U grades only." They may be counted toward a student's major, with the permission of his adviser and the chairman of his major department. Students do not turn in permission cards in the case of courses offering exclusively S-U grades.

A student may simultaneously take two courses offered exclusively on an S-U basis by any college in the University, or one course offered exclusively on an S-U basis and one course in which the student elects the S-U grade option.

An *incomplete* is not a satisfactory grade. It is used to indicate that a course has been left incomplete with respect to specific assignments which may include the final examination. The mark of *inc* will be assigned only in case of illness or prolonged absence beyond the control of the student, and only when the student has a substantial equity in a course. A student will have a substantial equity in a course when the remaining work can be completed without further registration in the course and when he has a passing grade for the completed portion. When a grade of *inc* is reported, the instructor will also indicate the reasons for it and the conditions for removing it. A mark of *inc* may be removed, with the consent of the dean, by meeting those conditions, by examination, or by whatever alternate methods the concerned department may direct. The make-up grade must be received by the Office of Records and Scheduling by the first day of classes of the second term following the semester for which the *inc* grade is recorded. If by that date no make-up grade has been received by the Scheduling Office, the *inc* grade will revert to a grade of F.

Students will be considered in good standing for the term if they successfully complete at least twelve hours and receive no more than one D and no grade of F or U. A student whose record falls below this level or who fails to make satisfactory overall progress in grades, or in hours (whether from failures or *incompletes*), or in the requirements of the College or the major may at any time be warned, placed on "final warning," suspended for a specific period of time (e.g., at least one year), or not allowed to register again in the College. A general guideline is that a student should be progressing toward the completion of degree requirements with at least 100 hours at a grade of C (not C-) or better.

A student who desires readmission from suspension should submit his request, a letter outlining his activities since suspension, and letters of reference from teachers or employers to the Committee on Academic Records, 142 Goldwin Smith Hall.

A student will not be allowed to register for the first term of his junior year unless he has been accepted into a major program of a department. If he has not met all the prerequisites for acceptance by the major department concerned, the department may be willing to accept him on a provisional basis. He may remain in the status of a provisional major throughout his junior year, but he must have final acceptance into a major program before he may register for his senior year.

All requirements for the degree must be completed

by the degree date. There will be no changes in a student's record after graduation except to correct clerical or administrative errors. Grades will remain unchanged; *incompletes* will not revert to F or U.

### Dean's List

The requirements for the Dean's List are left to the discretion of the Dean, and may vary from term to term. The specific criteria for a given term, together with the list of students who have met those criteria, will be posted on the bulletin board opposite 142 Goldwin Smith at the end of that term. In general, the requirement is a 3.5 grade point average in a program of at least fourteen credit hours taken for letter grades (with correspondingly higher averages required if only twelve or thirteen hours are taken for letter grades), and the completion of all work by the end of the semester.

## Leaves of Absence and Withdrawals

A leave of absence may be taken for any of a number of reasons. A leave implies the student's right to reregister in the College, though that right may be in several ways conditional. All leaves of absence are given for an unspecified but limited time; five years is the maximum length of time a student may leave his degree in abeyance.

A leave of absence is not the same as permission for in absentia study, and credit will by no means automatically be granted for academic work completed while a student is on leave. However, limited amounts of credit may be earned on leave by members of the armed services, by those who decide to study subjects not offered at Cornell, and by those students who are earning credits to submit as evidence for readmission. In each case, the appropriate Cornell department chairman must approve the credit. The Academic Records Committee, or its delegate, the Committee of Deans, will review the request for credit at the time of the student's readmission.

There are three kinds of leaves of absence:

1. A leave of absence for *personal* reasons is one with no conditions or strings of any kind attached. These leaves are given only to students in good standing and most are granted during the first eight weeks of the term. See the list of Important Dates, on p. 5, for the exact dates. Requests are made through a member of the Academic Advising Center staff. A student will be readmitted automatically to the College upon making such a request six weeks prior to the beginning of the term in which he wishes to return.
2. *Medical* leaves of absence are granted by the Secretary of the College only upon the recommendation of Gannett Clinic. They are granted for indefinite periods of time (up to five years) with the understanding that students may return at the beginning of any term after satisfying the Clinic that the medical condition involved has been corrected.
3. A *conditional* leave of absence may be granted to the student who requests a personal leave after the

stated deadline for the semester, or who is not in good standing, or who does not qualify for a medical leave. Normally a student on a conditional leave may not return for a period of at least one year. The conditions for readmission are established when the student requests the leave. This means that he must meet the stated conditions and submit letters of support establishing his readiness to return and continue his education.

A student wishing to take a leave of absence for any reason should contact a member of the Academic Advising Center, 137 Goldwin Smith Hall.

When a student takes a leave after the ninth week of the term, all of the courses for that term are automatically cancelled; "CNC" will appear on the record instead of grades. When the leave is taken before the ninth week, all courses are expunged from the record. At the time of readmission, a student's graduation date will be determined according to the length of the leave, the number of credits earned toward the degree, and College policies.

Students may not take two consecutive leaves and therefore should not ask for readmission until they are certain that they are ready to return.

A withdrawal is a voluntary severance of the student's connection with the University. If the student wishes to withdraw during a term for which he is already registered, the withdrawal must be requested by October 27, 1972, for the fall term 1972 and by April 10, 1973, for the spring term 1973. It is assumed that a student who has withdrawn will not return to this College.

When students take a leave of absence or withdraw, their parents are notified that such an action has been approved by the College.

Students who take a leave of absence or withdraw during a term for which they are already registered will be charged tuition and General Fee as follows:

First week	10% of semester total
Second week	20% of semester total
Third week	30% of semester total
Fourth week	40% of semester total
Fifth week	60% of semester total
Sixth week	80% of semester total
Seventh week	100% of semester total

No charge will be made if the effective date of the leave or withdrawal is within the first six days of the term.

## In Absentia Study

Students may sometimes be granted credit towards graduation for academic experiences outside Cornell. For example, a student majoring in a foreign language or literature may wish to study abroad, or another student may want to spend a year or a term at another university or other academic establishment in this country. In certain cases, it may be possible to arrange for credit to be awarded for a period of field-work experience also.

In order to be assured of credit in all such cases,

students must petition the Committee on Academic Records. Prior approval of all courses the student may wish to take must be obtained from the appropriate department chairmen at Cornell.

In considering such petitions, the Committee on Academic Records is concerned whether the student is qualified for such work, and whether the quality of the program is such that the time spent in absentia is at least the equivalent of studying at Cornell.

A student considering in absentia study should make an appointment with one of the members of the Academic Advising Center to discuss his plans and obtain assistance in preparing his petition to the Committee on Academic Records. Requests for permission to study in absentia must be submitted to the Dean's Office by April 1973 for fall term in absentia study, and by November 1972 for spring term in absentia study. Students should submit their petitions by these deadlines even if they have not as yet been accepted by the program or school to which they have applied.

## Special Programs

### College Scholar Program

The College Scholar Program is designed to provide particularly able students with an educational experience that will most fully complement their interests and their talents. While it assumes no special categories and has no fixed prerequisites, the Program will probably appeal most to the student who wishes to combine a traditional major with an entirely different interest (such as mathematics and one of the performing arts) and to the student who wishes to combine different disciplines into one coherent plan of study (such as international relations or comparative literature).

There are forty College Scholars in a class, chosen on the basis both of letters of recommendation and of the quality of their proposals. Each works closely with a College Scholar adviser to set up an individual educational plan. During their underclass years participants are relieved of all general College requirements, but they are expected and encouraged to broaden their experience and to explore interests and abilities not already manifest before their arrival at Cornell. The general requirements might also be replaced by the beginnings of a thorough training in one area (such as French literature, philosophy, and history) or in one period (such as the Enlightenment).

During their upperclass years some College Scholars will want to pursue a normal departmental major, whereas others will decide that their educational needs might best be served by departing from the traditional categories. Such students might well concentrate in one of the existing interdisciplinary programs such as American, Asian, or Latin American studies, Greek civilization, or comparative literature (these programs are described in detail in other sections of this *Announcement*). Still other students, in consultation with their advisers, will want to work out a plan which draws upon and unifies the resources of a number of departments. A major in area develop-



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ment would involve courses in economics, government, history, and social psychology; a major in history and literature would join studies in language and philosophy as well as history and literature; studying the history of art and doing one or more of the fine arts is a possible and sensible combination. Such freedom presupposes both scholarship and maturity, and College Scholars are expected to develop a thoughtful plan of study and to pursue their work with distinction.

Courses of independent study designed to complement or amplify a particular program may be arranged with or through the student's adviser. Independent study will be granted by the adviser, primarily to upperclassmen, when there is no regular course available and it meets a clear curricular need. Students should sign up for College Scholar 398–399 for two hours credit or College Scholar 498–499 for four hours credit.

Students are admitted into the Program in the spring term of their freshman year. Details of the Program and of the application procedure will be distributed in that term to all instructors in the Freshman Seminars Program and an announcement will be made in the *Cornell Daily Sun*. Inquiries should be addressed to Dean Connor, director of the Program, 159 Goldwin Smith Hall.

### Independent Majors Program

Students in the College are required to complete a course of study in a major field, usually within one of the departments. However, the departmental structure of the College does not exhaustively define legitimate areas of study. Some students may best be served by an interdepartmental major. Through the Independent Major Program, they may design their own major, with the close guidance of appropriate members of the College faculty. The Independent Major may only be used in cases where a departmental major clearly will not serve the purpose; it is not a vehicle for altering a departmental major or avoiding particular requirements.

Admission to the Program will be based on the quality of the proposed major and the student's ability to carry out his or her plans. Each application will be referred to a Board of three teachers from each of the appropriate divisions of the College (humanities, science, social science). They will evaluate the major for coherence, breadth, and depth, and will look at the student's record to judge his or her preparation for the proposed course of study. Majors will be approved only if they are as ample and rigorous as a departmental major; random selection of courses will be rejected. The Board may also specify changes which will be required or recommended before a major is approved; in any case, they will try to give the reasons for their decision.

Once a major is approved, it is the responsibility of the student and adviser to carry out the program as planned. Minor changes, because courses become unavailable or new courses are offered or for other routine reasons, will be arranged between the student and adviser. The student and adviser will also be

responsible for any special arrangements which need to be made regarding course prerequisites or other departmental regulations. The adviser will certify completion of the course of study as planned prior to graduation, just as a major department would ordinarily certify completion of the major. Serious changes in the program, including acceleration, or substantial alteration of the content of the major, must return to the Board for approval.

It is expected that Independent Majors will carry out more than usual amounts of independent study, often across disciplinary lines. With this in mind, the College has established special interdisciplinary independent study courses, Independent Major Program 351 and 352 for four hours credit per semester, and Independent Major Program 331 and 332 for two hours credit per semester. These courses must be taken under the direction of one or more members of the College faculty. Students must inform the Independent Major Office in 159 Goldwin Smith Hall if they register for these course numbers, and leave the name of the supervising faculty members on record there. Independent Majors are encouraged to use the opportunity these courses afford for individualized interdisciplinary work, especially to tie together an interdepartmental program.

Students in the Program may be eligible for Honors work in their senior year if they have maintained an overall average of 3.0 and an average of 3.5 within the major. Honors projects will be supervised by the adviser and other appropriate members of the faculty; application for Honors work must be made through the Program Office before preregistration for first semester senior year.

Application forms for the Program are available in 159 Goldwin Smith. All proposals are treated individually, but in general the Boards discuss the following points when reviewing Independent Major proposals. Is the Independent Major necessary; is the proposal the same as an established departmental major with only minor changes? Is the proposed equivalent to a major—does it have the breadth and scholarly depth a departmental major should have? Is there really a concentration, or are we dealing with a “cafeteria major”? Do the courses proposed fulfill the stated objectives; are there gaps? Is the student sufficiently prepared for all the courses proposed? Has the student demonstrated the ability necessary for work in certain fields? Does Cornell offer enough related courses to justify calling the proposal a major? Is the proposal too concentrated; would it be to the student's advantage to take the equivalent of an M.A.? Will the student destroy chances for admittance to a graduate school? (If the Board feels this is the case, this will be brought to the student's attention but will not mean the proposal will not be accepted). Will the student fulfill Cornell requirements for an A.B., including the stipulation that at least 100 hours must be in Arts and Sciences courses?

### Program in Greek Civilization

This is a program of studies in Greek civilization for a select group of freshmen and sophomores, whether

they plan to concentrate in the sciences or in the humanities. Its purpose is to give unity to the students' introduction to the liberal arts as they gain some understanding of philosophy, history, government, science, literature, art, and philosophy. A considerable amount of substantive knowledge is unified by its common origin in Hellenic culture, and the student will be introduced to this world which forms the deepest foundations of Western civilization.

An integrated approach to a single culture through the various disciplines is an experiment in liberal education. It is an experiment of a sort that needs to be renewed again and again in the humanities, since its goals—precise knowledge and broad horizons—are too easily separated. Ancient Greece is an ideal focus for such an approach. Everything we mean by "civilized" exists there in the highest quality and in manageable quantity—great poetry, art, philosophy, history, rhetoric, and science. A study of the important works can lead to an appreciation of each of these disciplines as it has been practiced at any time and in any place. For gaining perspective on our own society, remoteness in time is usually an advantage.

The Program is also an alternative to a professionalism which leaves students no occasion to raise the great questions of life in any systematic or scholarly way, a purpose for which many of the best students come to college in the first place. Because the combination of familiar and foreign elements in Greek thought is complicated, much of the teaching and learning will be through discussion. For that reason the Program is limited to about ten students each year. Regular course meetings will be supplemented by occasional colloquia involving faculty and students. Participation in the Program leaves the student free to take at least two other courses each semester and so to satisfy all underclass requirements and to prepare for his major. A typical schedule for the first two years follows. (For a detailed account of the courses see Program in Greek Civilization at the end of the Courses of Instruction section.)

#### Freshman Year

<i>Fall</i>	<i>Spring</i>
Greek Language	Greek Language
Greek Philosophy	Greek Literature in Translation
Greek History	
Elective	Elective
Elective	Elective
	Elective

#### Sophomore Year

<i>Fall</i>	<i>Spring</i>
Greek Language	Greek Political Thought
Greek Archaeology	Greek Language
Greek Science	Elective
Elective	Elective
Elective	Elective

Faculty members in the Program usually serve as academic advisers for its students. For further information write to the Program in Greek Civilization, 121 Goldwin Smith Hall, Cornell University, Ithaca, New York 14850.

## Program in Roman Civilization

The educational goals and general form of the Program in Roman Civilization are similar to those of the Program in Greek Civilization, outlined above. Roman civilization has its own distinctive appeal, with a rich and original literature, a profoundly important history, and a language and traditions which were the primary vehicles of Western culture for fifteen hundred years. The greatness of the Romans in literature, art, law, and the development of ideas would be difficult to exaggerate. Roman notions of politics and humanism are the backbone of European and American political and educational thought. Roman literature is an indispensable key to subsequent western prose and poetry. Classes with a strong emphasis on discussion offer the student ample opportunity for raising many issues fundamental to Western tradition. A typical schedule for the first two years follows.

#### Freshman Year

<i>Fall</i>	<i>Spring</i>
Latin Language	Latin Language
Roman History	Roman Civilization
Greek Civilization	Elective
Elective	Elective
Elective	Elective

#### Sophomore Year

<i>Fall</i>	<i>Spring</i>
Latin Language	Latin Language
Roman Philosophy	Roman Art and Archaeology
Elective	Roman Law/Politics
Elective	Elective
Elective	Elective

For further information, write to the Program in Roman Civilization, 121 Goldwin Smith Hall, Cornell University, Ithaca, New York 14850.

## Program of Jewish Studies

The Program of Jewish Studies is included in the broadened framework of the offerings of the Department of Semitic Languages and Literatures. The Program has grown out of the conviction that Judaic civilization, no less than Greek and Roman, merits comprehensive and thorough treatment. Accordingly, the Department's original offerings in the area of Hebrew language and literature have been considerably expanded and have branched out to include Jewish history. Proper understanding of any literature is inconceivable without adequate knowledge of the history of the people that created it.

Although further expansion of the Program is still called for to encompass the broad spectrum of disciplines in the field, the Program, as it is constituted at present, already enables students to obtain basic instruction and specialization in the fields of Hebrew and Aramaic languages, the Old Testament, the Apocryphal and Tannaitic Literatures, medieval Jewish philosophy, medieval Hebrew literature, modern Jewish thought, modern Hebrew literature, as well as medieval and modern Jewish history. In all these fields students may take courses on a graduate as well as undergraduate level.

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Students who may wish to major or specialize in any of the disciplines mentioned above will do well if they acquaint themselves with related fields in non-Jewish studies. For better understanding of medieval Jewish history, for instance, general familiarity with the history of the Middle Ages is, needless to say, most helpful. Similarly, students of non-Jewish disciplines may benefit from courses in the Program. Considerable areas in general history, such as the history of Christian Spain in the Middle Ages, or the history of Germany under Nazism, or the growth of Socialism, to cite a few examples, may be better understood by becoming acquainted with the parallel chapters in Jewish history.

Specialization in any of the disciplines included in the Program of Jewish Studies requires mastery of Hebrew, which is now feasible for students of Cornell under the present expanded offerings. Students are also advised to begin, early in their training, to obtain a working knowledge in one more language, depending on their major field of interest. Thus, for specialization in biblical and other parts of ancient Hebrew literature, knowledge of Aramaic or Greek may be essential; for the medieval period, Arabic, or Latin, or Spanish, or another language; for modern times, any of the modern languages, such as German, or Russian, or French. Students may get more precise counsel from their advisers or from the department head. For details concerning the courses included in the Program, see p. 122.

### International Studies

Students who wish to focus on some aspect of international studies should be able to organize a program of courses that will fit their needs well. For example, in the College of Arts and Sciences there are courses in comparative government, international relations, international law and organization, international economics, and the economics of development; they are listed under anthropology, Asian studies, economics, government, history, and sociology. There are also courses in more than twenty modern foreign languages. Cornell does not offer a degree in "international relations." The Department of Government does, however, offer a number of courses in international law and relations and it is possible at the graduate level to major in these subjects. Similarly, the Department of Economics provides a graduate major in international economics and development economics.

The College of Agriculture and Life Sciences offers courses in the economics of agricultural development, international agriculture, and rural sociology. The Graduate School of Business and Public Administration offers courses in international development. The School of Industrial and Labor Relations offers courses in international and comparative labor relations. The Law School offers courses in international and comparative law.

The student seeking specialized foreign-area knowledge may focus on one of the following interdisciplinary area programs: Chinese studies, Latin American

studies, or Southeast Asian studies. In addition, it is possible for the student to pursue an area interest in European studies, South Asian studies, or Soviet studies.

Freshmen and sophomores interested in an integrated introductory approach to international studies can take advantage of the Center for International Studies' new Undergraduate Interdisciplinary Program which is described in more detail on p. 131.

### Dance

The Dance Program is cosponsored by the Departments of Theatre Arts and Women's Physical Education. Though there is no major program offered at present, there are, in addition to many noncredit technique classes and various opportunities for performance, a number of courses which may be taken for academic credit. For a listing, see the offerings under Theatre Arts.

It is possible, with the approval of the Dance Faculty and the Independent Major Board, to declare an Independent Major in Dance. A curriculum of dance courses and courses in related areas offered by other departments may be arranged.

### Double Registration in the Law School

Interested students who can arrange to graduate in seven terms (i.e., in January of their fourth year) rather than eight (see the discussion under Acceleration, p. 17), may double-register in the Arts College and Law School during their seventh and eighth terms, so as to receive the A.B. degree at the end of the eighth term and the J.D. degree after only two additional years of study. In this way the A.B. and J.D. degrees can be earned in a total of only six years.

Students interested in planning for such a possibility must consult the Academic Advising Center and should do so as early as possible in their academic careers.

### Female Studies Program

The purposes of the Female Studies Program are (1) to broaden teaching and research about women, drawing upon the resources of many related disciplines, (2) to expand research about the female/male dimension, and (3) to cooperate with Extension and public service activities of the University.

For information regarding courses, consult the Office of Records and Scheduling, 134 Goldwin Smith Hall.

### Human Affairs Program

The Human Affairs Program is an attempt to integrate theory and practice by providing undergraduate stu-



dents with an intensive field-work experience linked to some form of seminar or classroom study at the University. While the different sections deal with a wide variety of social problems, they all have the following interrelated purposes:

1. To enrich Cornell education, especially at the undergraduate level, by providing students, staff, and faculty with opportunities to work on practical human problems in the surrounding region. HAP believes that education becomes more meaningful as theory is tested against experience both in the field and in the classroom and as the learner is placed in situations where his ideas and actions have direct human consequences.
2. To link the human resources of the university with the concerns of community groups and organizations, as they seek to solve their human problems and improve the conditions of their lives. Particular attention is directed toward providing services and resources to low-income people and minority groups whose interests very often lack public advocates.
3. To develop organizational relationships whereby students, professors, and extension specialists can work together in building innovative approaches to education. This includes, in the first instance, building relations between field projects and on-campus courses, seminars, and library studies.

Since few community problems involve only the knowledge of a single discipline, the HAP staff is engaged in making interdisciplinary linkages, bringing together students with different majors and professors with different disciplinary backgrounds. The aim of the exploration is to design projects that meet important community needs, as seen by community members themselves, and at the same time provide a rich educational experience for students and professors.

There are few community projects that can be brought to a satisfactory conclusion within a single semester. In fact, in most cases it takes the better part of a semester for students and professors to learn enough about people and problems to be of some use to the community or to develop more than a superficial analysis. Thus, the HAP staff tries to ensure that the same field project is utilized by, and receives the contributions of, several courses, seminars, and student theses. In this way, projects can grow and develop as long as they continue to serve useful functions to the community as well as to the Cornell educational program.

The HAP staff provides much of the long-range planning and continuity to ensure that student participation in community projects is not of the sporadic kind that does more harm than good. It includes individuals with experience in community affairs and organization who provide the liaison between students and members of the community. Equally important, the HAP staff has people whose academic background permits them to provide leadership in teaching and curriculum innovation and in developing methods to evaluate the educational worth of proposed projects.

In order to facilitate this long term and intensive

involvement, HAP offers up to six credits for participation in most of its courses. The colleges of Arts and Sciences, Architecture, Human Ecology, and Agriculture and Life Sciences, and the Hotel School accept HAP projects as part of their offerings.

Enrollment by a student in HAP requires admission to a specific project, after a personal discussion with appropriate faculty members and the project leader. Although specific requirements vary with each project, all students enrolled in HAP courses are expected to participate both in the field-work experience and in weekly seminars devoted to the discussion of specific field-work problems and the assigned reading for the course. The written analysis of the semester's work provides an occasion for the integration of the field-work experience with the reading and analysis presented in the seminar meetings. Information about specific course offerings is available at the Human Affairs Program office, 162 Olin Hall.

### Frederick George Marcham Scholar Program

The Marcham Scholar Program encourages undergraduates to work in tutorials with faculty members who are interested in interdisciplinary problems.

Immediately before the preregistration period in the spring term, the College will announce the names of the several faculty who will serve in the program during the following academic year and also the nature of the interdisciplinary work which will be taught by them in the tutorials. Interested students should apply directly to these faculty for acceptance into the program. Only a limited number of students can be accepted, so early consultation with the faculty is recommended.

Students accepted into the program will be required to participate in the Marcham Scholar Tutorials. Hours will be arranged with the faculty. A student may take the tutorial for one semester, or, preferably, throughout the year. For further information, students should contact Professor Walter LaFeber, Department of History.

### Preparation for Teaching

Teacher education at Cornell is under the supervision of the University Committee on Teacher Preparation. Programs in this College which are approved by the New York State Department of Education are available in English, mathematics, modern languages, science, and social studies in the 1972-73 academic year. A student can earn provisional secondary certification in New York State by completing one of these programs, each of which includes the requirements for the Bachelor's degree, professional courses in education or psychology, and a practice teaching experience in nearby schools. A fifth year of study at the Master's level is necessary to become permanently certified to teach in this state. Prospective teachers in one of the subject areas mentioned above may enroll in a five-year program leading to permanent certification.

All students interested in attaining provisional certification for secondary school teaching will need to

plan their programs very carefully and should inform their advisers of this interest as soon as possible, but not later than the end of the sophomore year. Questions may be directed to the appropriate faculty members or to advisers in the Academic Advising Center.

## Premedical Students

Students who intend to prepare for the study of medicine or dentistry are urged to report once each semester to the office of the Premedical Advisory Committee, 118 Stimson Hall. This Committee has established standard procedures to facilitate the eventual preparation of letters of evaluation for applicants to medical and dental schools. The chairman of the Committee is available at the office during stated hours each week to provide counseling on academic and curricular problems related to pre-medical and predental studies. The Committee also maintains a library of medical school catalogs and other publications which may be consulted at its office.

Medical educators generally agree that in planning his college course a premedical student should not allow his interest in science to exclude studies in the humanities. They also agree that it would be unfortunate for the future of medicine if all premedical students followed the same course of studies or majored in the same subject. For these and other reasons there is no fixed premedical curriculum at Cornell; there is no "premedical major," and no single major program is viewed as more desirable than any other in preparation for the study of medicine. Certain minimum requirements for admission are, however, prescribed by all medical schools. The most substantial of these requirements is in chemistry, and it is therefore recommended that the premedical student include chemistry in his freshman course of study. Some premedical students choose to take two sciences in the freshman year, either chemistry and physics or chemistry and biology. Students who plan to pursue major studies in biological sciences will find it advantageous, though not absolutely necessary, to include biology in their freshman programs.

The Premedical Advisory Committee suggests that since almost all medical schools require English composition for admission, prospective medical school applicants should elect to satisfy the Freshman Seminars requirement with six hours of English, or plan subsequent course work in this subject.

## Military Training

Programs leading to a commission are offered in military science, naval science, and aerospace studies (AFROTC). For information on credit granted toward the Bachelor of Arts degree for military science courses see the section Credit, p. 15. Full descriptions of the programs may be found in the *Announcement of Officer Education*.

## Scholarships

The Office of Scholarships and Financial Aid, 109 Day Hall, administers scholarship funds available to

students in the University. Some scholarships are open to any student in the University; others are open only to students in the College of Arts and Sciences. An entering student who wishes to apply for financial aid should complete the application form which accompanies the application for admission.

The following is a list of the scholarships available only to students in the College of Arts and Sciences:

The Dean's Scholarships  
The Spencer L. Adams Scholarships  
The Elisabeth Reamer Carson Scholarship Endowment  
The George C. Boldt Memorial Scholarships  
The Cornelis W. de Kiewiet Scholarship  
The Cornelia L. Hall Scholarship  
The Gertrude C. Hemingway Scholarship  
The Myrtle H. Miller Scholarship  
The Henry L. O'Brien Jr. Scholarship  
The Frederick A. Peek Scholarship Fund  
The Frederick A. Rice Scholarship Endowment  
The Winton G. Rossiter Scholarship  
The J. G. White Scholarship in Spanish

## New York State Residents

New York State offers various types of financial assistance to qualified college students who are state residents. It is very important that students seeking such aid obtain full information and meet promptly each application deadline.

### Scholar Incentive Program

Applications should be filed prior to July 1 before the academic year but will be accepted up to June 30 at the end of the academic year. Annual application is required.

### Regents College Scholarships for Undergraduates

Candidates should seek directions from their high school principal and/or guidance counselor.

Information on all of the above may be obtained by writing to the Regents Examination and Scholarships Center, New York State Education Department, Albany, New York 12224. Students seeking New York State guaranteed loans should apply to the New York State Higher Education Assistance Corporation, 159 Delaware Avenue, Delmar, New York 12054.

## Scholarship Information

Any questions regarding scholarships, including scholarships offered by New York and other states, may be addressed to the Office of Scholarships and Financial Aid.

## The Libraries

Cornell has eighteen separate libraries—two of them central and sixteen of them special and departmental. The central library's total holdings of nearly 4 million volumes place it among the ten largest university libraries in the country; about 175,000 volumes are added each year. The College is the principal beneficiary of the two main libraries, the Uris undergraduate library and the Olin research library, which face each

other on the south side of the Arts Quadrangle.

The prime aim of the Uris Library is to bring students and books as closely together as possible. Accordingly, the bookstacks, save for essential reserve books in heavy demand, are open to all readers. The holdings are selective rather than comprehensive. In addition to a reference collection of 4,000 bibliographies, encyclopedias, handbooks, and dictionaries, and about 300 periodicals, Uris contains about 100,000 volumes for course reading or for general exploration and recreation. A suite of three listening rooms houses a large collection of records and tapes of poetry, drama, fiction, and other material in the spoken arts.

The John M. Olin Library is one of the country's major research libraries. The first floor and lower level contain the Reference and Circulation Departments, the Wason Collection (the most complete holdings of Asian material in the country), the Rare Book Department, the Collection of Regional History and University Archives, and the Department of Maps, Microtexts, and Newspapers. The union catalog of all libraries on the Ithaca campus and the bibliography collection are on the first floor, near the center of the building.

The second through the seventh floors contain bookstacks and offices. They are reserved primarily for faculty, staff, graduate, and honors students, but undergraduates can easily and quickly obtain or discharge books at the circulation desk.

As a means of acquainting new students with its facilities and services, the library arranges for freshmen to have a lecture-tour early in the fall term.

## Further Information

For information on matters of general interest not contained in this *Announcement* such as details about health services and requirements; housing and dining services; tuition, fees, and living expenses; applications for financial aid; and motor vehicle regulations, consult the *Announcement of General Information*. This *Announcement* and those of the other schools and colleges of Cornell University are listed in the back of this catalog and may be obtained by writing the address given on that page or by inquiring at the administrative offices of the several schools and colleges.

# BOOK INFORMATION





# Courses of Instruction

## Freshman Seminars Program

The purpose of the Freshman Seminars Program (formerly Freshman Humanities Program) is to help freshmen improve their writing ability, while providing an introduction to a particular discipline and a small class experience. Improving one's ability to write means developing every skill, from spelling and grammar to syntax and style; from acquisition of vocabulary to better organization with emphasis on improving an intellectual process.

Students are expected to enroll in one of these courses, during the fall semester and in another during the spring semester of their first year in residence. Each course carries three hours of credit. A course used in satisfying the Freshman Seminar requirement may not be used in satisfying the Distribution or language requirement. Advanced placement credit may not be used to fulfill this requirement.

Foreign students who take English 211-212 may satisfy the Freshman Seminars requirement by taking two of the listed seminars offered by the humanities departments (English, History, History of Art, Classics, Philosophy, Romance Studies, Russian Literature, German Literature, Comparative Literature, and Medieval Studies). Foreign students will thereby have also satisfied the humanities-expressive arts distribution requirement.

Because there are usually late changes in the offerings of the Freshman Seminars Program, or in texts and content, the courses described below should be considered as illustrative rather than final.

## Anthropology

### **Anthropology 150 The Discovery of the Americas.**

Fall term. Credit three hours. Mr. Lynch.

An investigation of the discovery of the New World, beginning with American Indian origins in Asia and ending with the intellectual discovery by European chroniclers and travelers. Special attention will be given to the possibilities of Pre-Columbian transoceanic voyaging, especially from Europe. Readings will be taken from a wide variety of archaeological and anthropological sources, accounts of native American civilization by early Western observers, and the literature of the lunatic fringe.

## The Classics

### **Classics 119 Freshman Seminar in Greek Civilization.**

Fall term. Miss Asmis.

A study of Athenian culture in the time of Socrates, with a reading of tragic plays by Aeschylus, Sophocles, and Euripides, comedies by Aristophanes, the historical writings of Herodotus and Thucydides, and excerpts from philosophers and educators of the fifth century B.C. Selections will be chosen to illustrate important revolutions in thought, notably the changes in attitude towards religion, education, and the law.

### **Classics 120 Freshman Seminar in Latin Literature.**

Spring term. Mr. Moore.

Readings in translation of selected major works of Latin prose and poetry including Lucretius' *On the Nature of Things*; Virgil's *Eclogues*, *Georgics*, and *Aeneid*; excerpts from the histories of Tacitus; Petronius' *Satiricon*. Discussion and frequent essays.

### **[Classics 121 Freshman Seminar in Greek Philosophy.**

Fall term. Mr. Stokes. Not offered in 1972-73.]

### **Classics 122 Freshman Seminar in Greek Mythology**

**and Religion.** Spring term. Mr. Clinton.

"The Greeks and Their Gods." A seminar concerned with Greek myths and religion. Attention will be given to the relationship between myth and religion and to their form and meaning in literature, cults, and daily life. Reading will include works in translation of Homer, Aeschylus, Sophocles, Euripides, and Aristophanes, as well as some modern writings in which ancient Greek myths appear.

## Comparative Literature

### **Comparative Literature 101 The Defense of Art in the**

**Literary Work.** Either term. Credit three hours. M W F

11:15, T Th 2:30-3:45. Staff.

The defense of art and the justification of the artist are among the most widespread themes of modern literature, but they are by no means issues only of this time. Plato's attack on the poets in the *Republic* already set the pattern for some of the defensive postures that poets, and artists in general, have had to assume throughout history. The aim of this course will be to examine a number of definitions of art, not only in explicit aesthetic writings but also as they are incorporated into literary works. The readings will consist of short theoretical writings, plays, stories (Mann's *Death in Venice*), and one novel (*Don Quixote*, Part I).

### **Comparative Literature 102 The Art of Narrative and**

**the Unknown.** Either term. Credit three hours. M W F

9:05, T Th 2:30-3:45. Staff.

Storytelling may be viewed as a process of progressive

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elucidation, whether of a specific problem, the nature of a character, or even of the reader's own relation to a work. The classic form of such narrative is the mystery story, but many literary works of a more complex nature incorporate the same principle, for example, Sophocles' *Oedipus the King* and Dostoevsky's *Crime and Punishment*. In reading a selected group of plays, stories, and novels (including the two named here) we shall ask in each case how the structure of the story involves the reader in a discovery of the unknown.

**Comparative Literature 103 Varieties of the Imagination in Literature.** Either term. Credit three hours. M W F 11:15, 12:30; T Th 1:25–2:40. Staff.

Discussion of a series of works (dramas and prose fiction) arranged along a sliding scale, starting from an extremely "realistic" work and moving gradually toward two forms of "irreality"—the fantastic, grotesque, demonic, on the one hand, and romance, idealization, utopia, on the other. The questions to be asked will be: how does one define the world evoked in a work of literature and by what means does the author portray or project it. Works by Shakespeare, Swift, Tolstoy, Gogol, and others will be read.

## English

**English 131 Experience and Expression.**

Practice in the art of imaginative writing and attempts to explore the nature of that art. Students will write original works of poetry, fiction, plays, and the more personal kinds of exposition, and examine the language, rhetoric, and style of their own work as well as the work of established writers.

**English 133 The Uses of the Past.**

This course attempts to find out how the individual views, assesses, and finally shapes his past. The focus is both personal—a study of varieties of autobiography—and public—an examination of how writers respond to their history and culture. The writing emphasizes the formation of an individual voice. It ranges from journal keeping and attempts at autobiography to a critical handling of the literary problems that such a study raises. Reading includes *The Personal Voice* (an anthology), Allen Ginsberg, St. Augustine, James Agee, Malcolm X, and Eldridge Cleaver.

**English 135 Writing About Experience.**

Designed primarily to give the student practice in writing about his own experience, either in the present, here at Cornell, or in the past. Most of the class time will be given to the student's own work.

**English 141 Bible and Ancient Authors.**

Informal discussion of selected books from the Old and New Testaments, considered both as literature and moral teaching. Some of the major cycles of classical and Norse mythology will also be studied.

**English 137 Expository Writing.**

This course is designed to offer practice in writing and reading expository prose. Attention will be paid to matters of accuracy, organization, and idiom. The students' own work will provide most of the material.

**English 151 Shakespeare and the Moderns.**

Intensive study of some four plays by Shakespeare and three works drawn from the drama and fiction of the nineteenth and twentieth centuries. The course seeks not merely to encourage familiarity with major works of Shakespeare and of recent authors but also to study the drama and novel as literary forms and to examine and compare the different attitudes and world views implicit in these works. Texts include such plays of Shakespeare as *Richard III* and *Henry IV*, *Hamlet*, *King Lear*, and *Antony and Cleopatra*; and modern works by such writers as Conrad, Joyce, Shaw, Beckett, O'Neill, and Mailer.

**English 153 The Literature of Reason and Unreason.**

Intended as a comparison of major imaginative works of the eighteenth century and the modern period. Although no one theme dominates the course, special attention is given to the authors' attitudes towards man's rational potential. At present, reading includes *Candide*, *Billy Budd*, *Gulliver's Travels*, *Catcher in the Rye*, *The Stranger*, *Jonathan Wild*, *Secret Agent*, selected eighteenth-century plays, *Brave New World*, and *Portrait of the Artist as a Young Man*.

**English 157 American Fiction and Culture.**

Study and informal discussion of nineteenth-century American novels which comment significantly on emerging patterns of American manners and morals. Hawthorne, James, Howells, and Twain are central, and various works of such figures as Charles Brockden Brown, Cooper, Harold Fredric, William DeForest, and Dreiser are often included at the option of the individual instructor.

**English 237 The Reading of Fiction.** See p. 70.

**English 241 Introduction to Drama.** See p. 71.

## French

**French 105 Critic and Visionary from Voltaire to Sartre.**

Fall term. Credit three hours. M W F 1:25. Miss Colby. The search for new solutions to old problems as presented in a variety of literary forms from the Age of Enlightenment to the present day. All texts will be read in English translation.

**French 106 Laughter: A Study of the Philosophical and Psychological Theories Concerning the Origin and Meaning of Laughter in Modern Theory.** Spring term.

Credit three hours. M W F 1:25. Mrs. Parrish. Readings will begin with Bergson's *Laughter* as a basic text.

## German

**German 103, 104 Freshman Seminar in German Literature in English Translation: The Individual Under Pressure; The Problematic Self.** 103 Fall term only:

M W F 9:05, M W F 12:20, T Th 8:30–10, T Th S 10:10. 104 Spring term only: M W F 9:05, M W F 10:10, M W F 11:15, M W F 12:20, T Th 3:35. Credit three hours a term. Mr. Connor, Mrs. Ezergailis, and staff.

**German 103 The Individual Under Pressure.**

Readings and discussion of English translations of major German dramas dealing with the problems faced by man threatened by the constraints imposed by the traditional society around him. The texts studied will include works by Georg Büchner, Heinrich von Kleist, the Expressionists, Bertolt Brecht, Max Frisch, and others.

**German 104 The Problematic Self.**

Novels in English translation by half a dozen 20th century German authors ranging from Kafka to Hesse and Günter Grass, dealing with man's attempts to enlarge his understanding of his own spiritual make-up, and the individual's relationship to the otherness of his fellow men.

## Government

**Government 101S American Government.** Either term. Credit three hours.

Principles, problems, and processes in American political life.

**Government 104S Comparative Government.** Either term. A comparative study of major political movements and ideologies and of governmental institutions and processes

in modern democratic and nondemocratic states as well as in some of the newly emerging countries.

## History

**History 105–106 Introduction to Western Civilization.** 105 Fall term only; 106 Spring term only. First term prerequisite to the second except with consent of the instructor.

A survey of European history since antiquity. Attention is given equally to the major political and social developments and to the intellectual heritage of the West. A considerable portion of the reading is in contemporary sources.

**History 215–216 American History.** 215 Fall term only; 216 Spring term only. First term not prerequisite to the second.

Several major topics will be considered each term, and different modes of historical inquiry will be used. The principal topics during the fall term will be authority, power, and rebellion in colonial and antebellum America. A primary purpose will be to give the student opportunities to make his own historical judgments and analyze those made by others. These aims will be pursued through weekly seminar work and frequent short essays.

## History of Art

**History of Art 103 Freshman Seminar in Art History.** Either term. Credit three hours. Times to be announced. Staff.

Concentrating on man-made objects, ranging from letterheads to cities and including conventional categories of painting, sculpture, and architecture, this course is intended as an introduction to problems of perceiving the work of art and articulating the visual experience. Students meet in groups of about twenty to discuss this large range, through reproductions, concrete objects, and accessible environments, in order to involve the participant in the analysis of the visual experience. Readings and a number of short papers will be assigned throughout the term, but emphasis is placed on classroom participation. Conceived as a supplement, not a prerequisite, to art history, the course does not approach art in a conventional historical manner, but rather in terms of the information intrinsic to the object itself. Therefore, the course may be regarded as of general interest in fields other than art history, such as anthropology, psychology, and the like.

## Medieval Studies

**Medieval Studies 101–102 Medieval Literature and Culture.** 101 Fall term only; 102 Spring term only. Credit three hours a term. First term not prerequisite to the second.

An introduction to medieval civilization with emphasis on the way in which medieval literary texts reflect the culture that produced them. Readings will include such texts as *Sir Gawain and the Green Knight*, *The Song of Roland*, *The Romance of the Rose*, the French and German Percival stories, *The Poem of the Cid*, and *The Divine Comedy*. All works will be read in modern English translation.

## Philosophy

**Philosophy 100 Freshman Seminar in Philosophy.**

Either term. Credit three hours. Open only to freshmen who have not taken Philosophy 101. Independent sections. Fall term: M W 1:25–2:40, instructor to be announced; M W 2:30–3:45, Mr. Shoemaker; T Th 2:30–3:45, Mr. Ginot,

Mr. Wood and instructor to be announced. Spring term: M W 1:25–2:40, instructor to be announced; M W 2:30–3:45, Mr. Shoemaker and Mr. Malcolm; T Th 2:30–3:45, Mr. Stalnaker and instructor to be announced. Central topics in various areas of philosophy are studied and discussed in sections of this course.

## Russian

**Russian 103 Freshman Seminar: Russian Literature.** Either term. Credit three hours a term.

Reading of selected works of twentieth-century Russian literature in English translation and of some nineteenth-century classics (Dostoevsky, Tolstoy). The purpose of the seminar will be to give students an introduction to a few masterpieces of Russian literature (primarily short stories and a few novels) and then to proceed to concentrate on a particular theme—Russian literary treatments of the conflict between the old and the new (particularly in literature about the Soviet Revolution).

## Society for the Humanities

**Society for the Humanities 101 Science as Literature.**

Topics in physical and biological science approached through works chosen for their literary merit and exemplifying different literary forms. Readings will include original scientific writings, novels and biographies, examples of distinguished popularization, science fiction, etc. Short weekly papers will be required. Mr. Guerlac.

## Spanish

**Spanish 105 Permanence and Revolution in Twentieth-Century Spanish American Prose Fiction.** Fall term. Credit three hours. M W F 2:30. Mr. González.

An examination of the myths of permanence and revolution in the works of Borges, Carpentier, García Márquez, and other myth-makers in contemporary Latin America. Readings, papers, and class discussion in English.

**Spanish 106 From Escape to Confrontation: the Modern Spanish Drama.** Spring term. Credit three hours. M W F 9:05. Mr. Kronik.

A review of the changing modes of the theatre in Spain from the poetic drama of Lorca to the theater of protest of Arrabal and others in the sixties. Readings, papers, and class discussion in English.

## Africana Studies

Certain courses offered by the Africana Studies and Research Center have been accepted by the Educational Policy Committee of the College of Arts and Sciences for inclusion in the 100 hours of Arts and Sciences courses required for the A.B. degree. A major in Africana Studies has also been approved by the faculty of the College. Details regarding the major in Africana studies and regarding course offerings are available at the Africana Studies and Research Center, 310 Triphammer Road. See also Credit, p. 15, and Foreign Language, p. 16, under Requirements for Graduation.

## Distribution Requirement

The faculty of the College has authorized the Dean's Office to waive one or two of the four Distribution requirements for a student taking an equivalent number of courses in the Africana Studies and Research Center. For details, see p. 16.

## American Studies

Mr. R. Polenberg, Chairman; Mr. R. Elias; Miss Mary Beth Norton; Messrs. B. C. Rosen, S. C. Strout, Jr.

The American Studies Committee seeks to encourage interdisciplinary work in the history and culture of America. At present it offers the choice of a major subject in American studies only to graduate students in English and history. Specific programs are arranged individually with the student's special committee. Undergraduates who wish to concentrate in American studies may apply to the Independent Majors Program.

## Anthropology

Mr. A. T. Kirsch, Chairman; Messrs. R. Ascher, D. R. DeGlopper, D. J. Greenwood, T. A. Gregor, L. W. Hazlehurst, J. S. Henderson, C. F. Hockett, K. A. R. Kennedy, B. Lambert, W. W. Lambert, T. F. Lynch, M. E. Meeker, J. V. Murra, L. Sharp, J. T. Siegel, R. J. Smith, W. A. Stini, R. B. Thomas, F. W. Young.

Two majors are offered by the Department: (1) a major in anthropology, and (2) a major in social relations.

## Anthropology

For fulfillment of the major, students are required to have taken Anthropology 101 and 102 and an additional thirty-two hours chosen from courses given at the 300 level or above. Eight of these hours may be taken at a comparable level in related fields outside the Department and with the approval of the adviser.

The student's developing interests may lead him to concentrate in the humanistic, social, or natural science aspects of anthropology, which as a broad field includes the subdivisions of archaeology, social anthropology, linguistics, psychological anthropology, and physical anthropology. The specific program of courses in the major and related subjects is designed by the student in consultation with his major adviser.

Attention of students is directed to the course offerings in archaeology, biological sciences, and linguistics, where subjects closely related to anthropology are treated.

## Social Relations

The major in social relations is offered jointly by the Department of Anthropology and the Department of Sociology. The major provides the student with basic competence in cultural anthropology, social psychology, and sociology, while giving particular emphasis to the common methods of research in these disciplines. The student electing this major is expected to obtain a grasp of the common interests and evidence of these disciplines as well as knowledge of their unique insights in attempting to develop generalizations regarding man in society. The student's work is integrated in his senior year when he takes the Social Relations Seminar in which he is expected to interrelate aspects of the theory and data of the three disciplines.

## Prerequisites to the Major

The candidate must apply to the Committee on Admission to the Social Relations Major, offering the following: (a) either Anthropology 101 or Sociology 101, (b) either Psychology 101 or Human Development and Family Studies 115 or Sociology 281, and (c) Industrial and Labor Relations 210 or the equivalent.

## The Major

The major calls for a minimum of thirty-six hours of course work as follows:

- a. Three pairs or other combinations of related courses at the 300 level or above, to be selected in consultation with the major adviser. These six courses must include two from each of the following disciplines: anthropology, social psychology, sociology.
- b. At least one course in methods, to be selected from the following: anthropological methods, techniques of experimentation (psychology), methods in sociology, advanced psychological statistics, the philosophy of science or of social science, advanced statistics (such as Industrial and Labor Relations 311).
- c. At least one course in theory which is related to social relations.
- d. The senior seminar in social relations (Sociology 497 or Anthropology 495).

A list of courses that may be used to satisfy the requirements for the major in social relations is available from any major adviser.

Students seeking admission to the program in social relations should apply to the chairman of the Social Relations Committee, Mr. Robin M. Williams, Jr., Department of Sociology.

## Human Biology

Human Biology is a program of study offered in the Department of Anthropology, Division of Biological Sciences, School of Nutrition, and the Veterinary College. The purpose of the program is the training of students in a broad variety of subjects within the area of human biology. Such subjects would include human evolution, ecology, genetics, behavior, anatomy, physiology, etc. To undergraduate students the program is offered as a concentration.

## Application

All inquiries and correspondence relating to the concentration in Human Biology are handled in the offices of the Department of Anthropology. The applicant will be assigned to a biological anthropologist in the Department of Anthropology who will serve as his temporary adviser. With this member of the faculty, the undergraduate can discuss whether he wishes to pursue a concentration in Human Biology which would lead to the conferral of the Bachelor of Arts (Science) degree in Anthropology, or to the conferral of the same degree in the field of Biological Sciences. Should the student choose to work towards the degree in the latter field, then he will be referred to an adviser in the Division of the Biological Sciences. It is possible for an undergraduate registered in the Human Biology concentration to earn a degree in other closely allied fields such as psychology.

## Requirements

The requirements for the concentration in Human Biology are designed to insure sufficient background in the physical sciences and mathematics to enable the student to pursue a wide range of interests in the area of modern biology. In the freshman year, two semesters of biology (Biological Sciences 101-101L and 102-102L), two semesters of general chemistry (Chemistry 107-108), and two semesters of calculus (Mathematics 111-112, 111-122 or 207-208) will normally be completed. One lecture course in organic chemistry and one organic chemistry laboratory (Chemistry 353-355 or 355-356 and 357-358), a course in genetics (Biological Sciences 281),



and a course in Biochemistry (Biological Sciences 431 or 531-532) are requirements which can be completed by the middle of the sophomore year. Two semesters of Physics (Physics 101-102 or 107-108) are required and should be completed early in the student's program.

The concentration in Human Biology requires a total of 14 credit hours selected from the following: Anthropology 102, 221, 304, 372, 373, 374, 375, 471, 472 and Biological Sciences 273, 361, and 475 (Section of Ecology, Evolution and Systematics). Biological Science courses included in the concentration requirement may not simultaneously be used to fulfill the breadth requirement.

Breadth requirements, designed to ensure that the student in Human Biology is familiar with areas of biology outside his concentration, specify that each student must pass a course in two of the following categories.

- 1) Developmental Biology: Biological Sciences 347, 385.
- 2) Ecology and Evolution: Biological Sciences 361, 475.
- 3) Geology: Geological Sciences 101.
- 4) Microbiology: Biological Sciences 290A.
- 5) Morphology: Biological Sciences 311, 313, 316, 345.
- 6) Neurobiology and Behavior: Biological Sciences 320, 421.
- 7) Physical Sciences and Mathematics: Chemistry 236, 287, 289; Mathematics 213, 221; Statistics 510.
- 8) Physiology: Biological Sciences 242 or 340, 410, 414.
- 9) Taxonomy: Biological Sciences 273, 316, 371, 344; Entomology 212; Plant Pathology 309.

## Facilities

Cornell has a modern physical anthropology laboratory with a collection of osteological and fossil cast materials. Facilities for serology, anthropometry, primate dissection, and work physiology studies are available. Calculators and a statistical and reference library are maintained in the laboratory as well as drafting and photographic equipment.

## Special Programs

Specialized individual study programs are offered in Anthropology 497-498 (Topics in Anthropology), open to a limited number of juniors and seniors. Consent of the instructor is required.

The Department of Anthropology holds colloquia throughout the academic year. Faculty from Cornell and other universities participate in discussion of current research and problems in anthropology; students are encouraged to attend.

## The Honors Program

Students majoring in anthropology who seek admission to the Department's Honors program should file application on a form obtainable in the Department office before preregistration in the fall term of their junior year. Those admitted to the program preregister in Anthropology 391 for the spring term of their junior year. The Honors Thesis is written under faculty supervision in Anthropology 492 in the fall or spring term of the student's senior year. Further details of the program can be obtained at the time of application.

## Distribution Requirement

The Distribution requirement in social sciences can be met in anthropology by any two of the following courses.

**101 Introduction to Cultural Anthropology.** Either term. Credit three hours. Limited to freshmen and sophomores. Fall term: M W F 9:05, discussion sections to be arranged. Mr. Greenwood. Spring term: M W F 9:05, discussion sections to be arranged. Mr. Gregor.

A comparative study of the organization of cultural behavior in systems of communications, technology, social relations, ritual, ideas, and sentiments; the relation of such systems to personal behavior and to continuity, change, and cultural transfer in history. Illustrative materials drawn largely from non-Western societies.

**102 The Evolution of Man.** Spring term. Credit three hours. Anthropology 101 is not a prerequisite to Anthropology 102. M W F 11:15, discussion sections to be arranged. Mr. Stini.

A survey of the processes and history of man's evolution. The mechanisms of evolutionary change and adaptation to the environment are examined from the standpoint of both archaeology and human biology. The presentation of material from both disciplines makes possible a documentation of the evidence of the progress of evolutionary change at both the organic and cultural levels. In addition, aspects of ongoing evolution in living populations are discussed with emphasis on the long-term interaction of biological and cultural factors.

**150 The Discovery of the Americas.** Fall term. Credit three hours. Mr. Lynch.

For course description, see Freshman Seminars Program, p. 29.

**[Introduction to Archaeology (Archaeology 200).** Spring term. Credit three hours. S-U grades only. Open to all students whether or not they elect the concentration. Enrollment limit: 170 students. Not offered in 1972-73.]

**Introduction to the Scientific Study of Language (Linguistics 201-202).**

**Survey of Human Biology (Biological Sciences 210).**

**Introduction to Art History: Beginnings of Civilization (History of Art 210).**

**216 The Study of Complex Societies.** Spring term. Credit three hours. T Th S 10:10. Mr. DeGlopper. Anthropological approaches to the study of complex premodern or peasant societies. Major topics include the economic, social, and cultural life of peasants, and the nature of local systems and their integration with larger political and cultural units.

**218 Popular Cultural Anthropology: An Evaluation.** Spring term. Credit three hours. M W F 9:05. Mr. Greenwood.

Through rapid popularization, anthropological ideas are said to have a considerable impact on our society, yet academic reviews of popular works (for example, Mead, Morris, Tiger, Montagu) are often negative. Through an examination of the content of "popular" works and comparison with "scientific" works on the same subjects, the course will determine whether the former faithfully represent the latter. If not, an attempt will be made to determine how scientific results are modified for popular consumption. If "popular" works adequately represent the field, then academic criticism can be termed unfair.

**221 The Biology of Man.** Fall term. Credit three hours. M W F 10:10. Mr. Stini.

A survey of important biological characteristics of the human species, with emphasis on human growth and development and the effects of environmental factors on the phenotypic expression of genetic traits. The interaction of various human populations with their environments, as seen in disease and nutritional stress, will be discussed with reference to case study material.

**Individual Study in Archaeology and Related Fields (Archaeology 300).** Fall term. Credit to be arranged. Prerequisite: Archaeology 200 and consent of the instructor. Hours to be arranged. Concentration advisers. Topics of particular interest to the student pursued by him with the guidance of a faculty member.

## 34 Anthropology

**301 Social Anthropology.** Fall term. Credit four hours. Open to juniors and seniors who have not had Anthropology 101. M W F 10:10. Mr. DeGlopper.

Major topics in social and cultural anthropology, such as the comparative study of kinship and marriage, political and legal organization, ritual and symbolic systems, and cultural change, are examined in some detail. The definition of problems and the utility of various modes of explanation will be stressed.

**302 Language and Culture.** Spring term. Credit four hours. M W F 10:10. Mr. Hockett.

A survey of the field of linguistics as a branch of anthropology.

**303 Prehistoric Archaeology.** Spring term. Credit four hours. M W F 9:05. Mr. Lynch.

A study of Old World prehistory from the origins of culture in the Palaeolithic through the beginnings of civilization. Stress will be given the early African materials, the origins and diffusion of agriculture, and the prehistoric background of European and Asian civilizations.

**304 Physical Anthropology.** Spring term. Credit four hours. M W F 1:25. Mr. Thomas.

A survey of evolutionary and ecological principles employed in the study of man and nonhuman primates; primate behavior; human palaeontology; biological variation between human populations; population genetics; the human life cycle; and man's adaptation to the environment.

**[305 Psychological Anthropology.** Fall term. Credit four hours. Not offered in 1972-73.]

**313 Cultural Change: Urban Anthropology.** Spring term. Credit four hours. T Th 1:25-3:00. Mr. Smith.

An examination of sociocultural structure and process in urban settings, with emphasis on the role of rural migrants, the relationship of urbanism to political and economic development, the role of voluntary associations, and the adjustment of family and kinship groups to urban life. Emphasis on Asian, African, and Latin American urban centers.

**314 Applied Anthropology.** Spring term. Credit four hours. T Th 2:30. Mr. Sharp.

What anthropology knows or suspects about some general processes of cultural change; and the application of these insights to practical and ethical problems faced in the planning, conduct, and evaluation of programs of intervention and change. Discussion of selected case studies attempts to bring out what should be known about local, regional, or national cultural systems by engineers, agricultural scientists, medical or public health specialists, business or industrial practitioners, social scientists, or humanists interested in ameliorative or revolutionary change in the behavior of others in their own or foreign societies.

**322 Comparative Religious Systems.** Spring term.

Credit four hours. T Th 11:15. Mr. Kirsch.

A survey of anthropological approaches to the study of myth, ritual, and world view taken as symbolic systems. The general characteristics of symbol systems, how they are perpetuated and elaborated, and their role in shaping social life will be explored. The social and psychological functions of myth and ritual in primitive and complex societies will be compared. An attempt will be made to discover what conditions are conducive to or inhibit radical symbolic transformations and what the implications of such changes might be.

**323 Kinship and Social Organization.** Fall term. Credit four hours. M W F 11:15. Mr. B. Lambert.

The development of kinship studies, analysis of the family, unilineal and bilateral systems of kinship and marriage. The study of kinship terminology. Kinship in small-scale and complex societies. Political, economic, and religious aspects of kinship organization.

**326 Economic Anthropology.** Spring term. Credit four hours. M W F 11:15. Mr. Greenwood.

Economic anthropology attempts to assess the cross-cultural utility of formal economic theory while also characterizing the operations and structures of primitive and peasant economies. Because strongly held Western preconceptions about the nature of economic things block most attempts to understand unfamiliar economies, much of the course focuses on the analysis of the variety of definitions of economizing and economic systems that we employ and their implications for cross-cultural studies. After these problems have been examined, the course considers formal and substantive strategies of analysis; the problem of economic rationality; and also provides a brief critique of theories of economic development.

**329 Political Anthropology.** Fall term. Credit four hours. M W F 1:25. Mr. Meeker.

Recent studies in political anthropology concerning political systems and political processes are reviewed. These studies are interpreted as attempts to resolve the problem of analyzing politics in relation to an indigenous political culture. It is argued that no satisfactory solution to this problem has yet been found. The difficulty is related to distinctive concepts of "self," "society," and "polity" in non-Western cultures which cannot be adequately understood in terms of Western political or sociological concepts. Examples are taken from the Near East, Africa, Southeast Asia, Japan, and Mexico.

**330 Ethnology of North America.** Spring term. Credit

four hours. M W F 10:10. Messrs. B. Lambert and Smith.

A general survey of the ethnography of North America, with emphasis on problems and topics to which the North American materials are most relevant. Selected cultures will be considered in some detail. Contemporary developments will be discussed, with an emphasis on Pan-Indianism and nativistic revivals.

**332 Ethnology of South America.** Fall term. Credit

four hours. M W F 10:10. Mr. Gregor.

A descriptive survey and analysis of native cultures concentrating on a number of theoretical problems, including the nature of South American cultural history, the ecology of hunters and agriculturalists, the causes and consequences of aboriginal warfare, the nature of patterns of kinship and dual organization, and the structure of religion. Representative groups from all culture areas are considered, but primary attention is directed toward the South American lowlands.

**333 Ethnology of the Andean Region.** Spring term.

Credit four hours. M W F 2:30. Mr. Murra.

Cultural continuities in the development of Andean societies. The ecologic, ethnohistoric and contemporary ethnological record. The Andean heritage as a resource for "modernization."

**[334 Ethnology of Island Southeast Asia.** Spring term.

Credit four hours. Not offered in 1972-73.]

**335 Ethnology of Mainland Southeast Asia.** Fall term.

Credit four hours. T Th 2:30. Mr. Sharp.

A comparative study of selected cultural systems in Burma, Thailand, Laos, Cambodia, and Vietnam; the role of ethnic traditions in the modernization of these complex societies under the influence of Indian, Chinese, Moslem, and Western civilizations.

**[336 Ethnology of Oceania.** Fall term. Credit four hours.

Not offered in 1972-73.]

**337 Ethnology of the Islamic Near East.** Spring term.

Credit four hours. M W F 1:25. Mr. Meeker.

Conceptions of history and society implicit in the cultures of Islamic peoples of the Near East are examined and used as a basis for the interpretation of Islamic rituals, the character of Islamic sects, patterns of kinship and

marriage and other matters. Correspondences between the forms of the polity among tribal peoples and one or two Near Eastern traditional states are discussed in terms of these concepts. Some suggestions are also made for the understanding of modern nationalist movements in the Near East.

**[338 Ethnology of Africa.** Spring term. Credit four hours. Not offered in 1972-73.]

**341 Culture and Society in South Asia.** Fall term. Credit four hours. T Th S 9:05. Mr. Hazlehurst. A study of the mythological, legendary, and historical sources of South Asian civilization and their representation in social and cultural life.

**343 Traditional Chinese Society and Culture.** Fall term. Credit four hours. M W F 1:25. Mr. DeGlopper. Chinese society in the nineteenth and early twentieth centuries is considered as a complex, premodern society. Major topics include family and kinship; villages and their integration into local systems; voluntary and formal organizations; social stratification and mobility; and religion, ideology and values.

**344 Modern Chinese Society.** Spring term. Credit four hours. Prerequisite: Anthropology 343 or consent of instructor. T Th 3:35-5:00. Mr. DeGlopper. The emphasis is on changes in Chinese society and culture, both among the Overseas Chinese and in China proper.

**345 Japanese Culture and Society.** Fall term. Credit four hours. M W F 9:05. Mr. Smith. A survey of the social structure of Japan and a discussion of trends in urban and rural life during the past century. Topics to be emphasized include the family, ancestor worship, community and social organization, and urbanism and modernization.

**[346 Ethnology of the United States.** Spring term. Credit four hours. Not offered in 1972-73.]

**350 Comparative Civilizations.** Fall term. Credit four hours. W 1:25-3:30. Mr. Henderson. An archaeological approach to non-Western civilizations. Emphasis will be upon the origins and early development of civilizations in Asia and in the New World. Consideration will be given to the nature of civilization and the problem of inferring the existence of its properties from archaeological evidence.

**354 Archaeology of the Americas I.** Fall term. Credit four hours. M W F 9:05. Mr. Lynch. A study of the prehistoric cultures of the New World. Major topics of the term will include the entry of man, early adaptations to diverse environments, hunting and gathering peoples to the ethnographic present, and the beginnings of agriculture. Both North and South America will be discussed, but in the later time periods the areal emphasis will shift to the American West, the Norse in America, and other North American problems.

**355 Archaeology of the Americas II.** Spring term. Credit four hours. M W F 10:10. Mr. Henderson. A consideration of the origins, development and spread of the native civilizations of North and South America. Emphasis will be given to the prehistoric cultural developments in Mesoamerica and the Andes from the emergence of civilized groups to the European discovery of the New World.

**356 Mesoamerican Thought and Culture.** Fall term. Credit four hours. Prerequisites: Anthropology 355 or 418 or consent of instructor. T Th 10:10. Mr. Henderson. A consideration of those aspects of Mesoamerican culture revealed in the surviving pre-Columbian native documents. Primary emphasis will be upon the religious, calendric, and astronomical information contained in the Central

Mexican and Maya codices. Consideration will also be given the historical sources, including the *Mixtec* codices and the Maya inscriptions.

**372 Human Biological Variation.** Spring term. Credit four hours. M W F 2:30. Mr. Stini. A detailed analysis of the forces producing differences between human populations. Genetics, epidemiology, demography, and physiology all combine to produce the variety seen in divergent peoples. A critique of the concept of race as a taxonomic category is developed as evidence generated by a number of biological disciplines is synthesized.

**[373 Physical Anthropology of the Living.** Fall term. Credit four hours. Not offered in 1972-73.]

**374 Human Palaeontology.** Spring term. Credit four hours. T Th 3:35. Mr. Kennedy. A broad survey of the fossil evidence for human evolution with special attention to skeletal-dental anatomy, geological contexts, palaeoecology, dating methods, archaeological associations, and current theories of primate phylogeny.

**375 Ecology and Human Biology.** Fall term. Credit four hours. M W F 11:15. Mr. Thomas. A study of man's interaction with his physical, biological, and social environment. Principles of animal ecology and environmental physiology applicable to human populations will be examined, and methods employed in the study of human ecology will be evaluated.

#### Theories of Personality (Sociology 385).

**391 Honors Seminar.** Spring term. Credit four hours. Open to majors in their junior year. Hours to be arranged. Staff.

**[412 Contemporary Anthropological Theory.** Spring term. Credit four hours. Not offered in 1972-73.]

**413 The History of Anthropology in the United States.** Fall term. Credit four hours. Prerequisite: Anthropology 101 and at least one areal ethnology course. T Th 11:15. Mr. Murra. Anthropological inquiries in the U.S. will be traced from the days of L. H. Morgan, Major Powell and F. W. Putnam through the professionalization of the discipline in the 1890's until today. Institutional developments and the personalities influential at crucial moments of innovation will be emphasized, not only theories. The specific features which distinguish U.S. anthropology from the French, Soviet, British, or Central European varieties will be sought.

**[Pre-Columbian Art (History of Art 415).** Not offered in 1972-73.]

**418 Ethnohistory.** Spring term. Credit four hours. Prerequisite: Anthropology 101 and at least one areal ethnology course. M W F 9:05. Mr. Murra. The utilization in historical research of concepts derived from field anthropology such as status lineages, rights-in-land, ethnogenesis, or dual division. Problems in evaluating African, Meso-American and Andean oral traditions. The use of early European eye-witness reports.

**Comparative Rural Societies (Rural Sociology 420, College of Agriculture).** Fall term. Credit four hours. M W F 11:15. Mr. Young.

**421 Comparative Social Systems.** Fall term. Credit four hours. M W F 10:10. Mr. Hazlehurst. An examination of various anthropological approaches to the comparative study of society. Special attention is given to the conditions under which the theories of social and structural anthropology emerged and the implications of this for an understanding of the media (e.g., kinship, myth, social organization) used by anthropologists in the comparison and analysis of cultural and social life.

## 36 Anthropology

**424 Myth, Ritual, and Symbol.** Fall term. Credit four hours. M W F 2:35. Mr. B. Lambert.

This course is concerned with the nature of consciousness of those peoples usually studied by anthropologists. The starting point is the analysis of ritual, especially rites of passage, and of conceptions of time. Topics such as myth, curing rites, and millenarianism will be considered in the light of various interpretations.

**450 Tin\*Can Archaeology.** Fall term; Spring term. Credit two hours. Lectures, T 1:25. Term papers in tutorials. Mr. Ascher.

An irregular introduction to archaeology using the recent past of the U.S.A. for illustrative materials wherever possible.

**451 Archaeological Boundaries: The Arts.** Fall term. Credit four hours. S-U grades only. Enrollment limit: 20 students. Anthropology 450 advised, but not required, as a corequisite or prerequisite. Th 1:25-3:20. Mr. Ascher. An experimental course focused on places where the arts and archaeology touch. Topics vary, but they may be drawn from American studies, history, literature, the creative arts, linguistics, ethnology, and from certain branches of economics and psychology. There are readings in the decipherment of scripts, ocean voyages, mythical kingdoms, and the shapes of ancient cities. The use of cinema, photography, and sound in archaeological interpretations are explored. Laboratory or fieldwork is encouraged where it is related to individual projects.

**452 Archaeological Boundaries: The Sciences.** Spring term. Credit four hours. S-U grades only. Enrollment limit: 20 students. Anthropology 450 advised, but not required, as a corequisite or prerequisite. Th 1:25-3:20. Mr. Ascher. An experimental course focused on recent and potential contributions of the sciences to archaeology. Topics vary, but may include applications from the life or physical sciences, as well as from mathematics and engineering. There are readings on controversies such as the possible use of Stonehenge as a prehistoric astronomical observatory, and the role played by man in the extinction of large mammals. The design and construction of experimental structures and instruments is stressed. Laboratory or fieldwork is encouraged where it is related to individual projects.

**471 Physical Anthropology Laboratory.** Fall term. Credit four hours. T Th 10:10-12:05. Mr. Kennedy. Practical exercises and demonstrations of modern approaches to the methodology of physical anthropology. Emphasis upon comparative primate anatomy, the human palaeontological record, description of skeletal and living subjects, palaeopathology, skeletal maturation, and relevant field techniques for the archaeologist.

**472 Physical Anthropology Laboratory.** Spring term. Credit four hours. T Th 10:10-12:05. Mr. Thomas. Contemporary human physiological and morphological variation, blood group serology, anthropometry, and statistical analysis of discrete and continuous traits are treated with emphasis on laboratory and field methodology. Techniques suitable for comparative growth studies and assessment of the nutritional status of populations are demonstrated and discussed.

**479 Human Ethology.** Spring term. Credit three hours. Prerequisite: consent of instructor. Hours to be arranged. Mr. Thomas.

A speculative and critical attempt to understand human behavior biologically. Rather than a narrow "perspective" or "standpoint," we will treat ethology as an integration of perspectives, including evolutionary, ontogenetic, physiological and adaptive approaches. Difficulties of coordinating ethology, anthropology, and psychology will not be minimized.

**492 Honors Thesis.** Either term. Credit four hours. Prerequisite: Anthropology 391. Hours to be arranged. Staff.

**493-494 Seminars in Archaeology.** 493 Fall term; 494 Spring term. Credit to be arranged. Prerequisite: consent of instructor. Hours to be arranged. Messrs. Ascher, Henderson, and Lynch.

A consideration of questions in modern archaeology. In any year, the specific topics are developed in collaboration with the students taking the seminar.

**495 Social Relations Seminar (Also Sociology 497).** Spring term. Credit four hours. Open only to seniors majoring in social relations. Hours to be arranged.

**497-498 Topics in Anthropology.** 497 Fall term; 498 Spring term. Credit to be arranged. Prerequisite: consent of the instructor. Hours to be arranged. Staff.

## Graduate Seminars

The following seminars are for graduate students but are open to qualified seniors by consent of the instructor, unless otherwise indicated. Those seminars with announced special topics may be repeated.

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**502 The Design of Field Research.** Fall term. Credit four hours. T 3:35. Mr. Greenwood.

**503 Human Biology and Cultural Behavior.** Fall term. Credit four hours. W 3:35-5:30. Mr. Stini.

**507-508 Special Problems in Anthropology.** 507 Fall term; 508 Spring term. Credit and hours to be arranged. Staff.

**510 The Anthropological Study of Art.** Fall term. Credit four hours. W 3:35. Mr. Smith.

**[512 History of Anthropological Thought.** Fall term. Credit four hours. Not offered in 1972-73.]

**513 Contemporary Anthropological Theory.** Fall term. Credit four hours. Th 3:35-5:30. Mr. Meeker.

**Cross-Cultural Research Methods (Rural Sociology 516, College of Agriculture).** Spring term. Credit four hours. T Th 2:30. Mr. Young.

**517 Conceptual Systems in Anthropology.** Fall term. Credit four hours. Th 1:25-3:20. Mr. Kirsch.

**518 Cultural Processes: The Fate of Peasantries in the Modern World.** Spring term. Credit four hours. W 3:35-5:30. Mr. Sharp.

**[523 Social Systems: The Anthropology of Face-to-Face Interaction.** Fall term. Credit four hours. Not offered in 1972-73.]

**[526 Problems in Economic Anthropology.** Spring term. Credit four hours. Not offered in 1972-73.]

**[528 Political Anthropology: Historiography of Non-Western Peoples.** Spring term. Credit four hours. Not offered in 1972-73.]

**[530 North America.** Spring term. Credit four hours. Not offered in 1972-73.]

**[531 Middle America.** Fall term. Credit four hours. Not offered in 1972-73.]

**532 Tribal Peoples of Lowland South America.** Spring term. Credit four hours. Th 3:35-5:30. Mr. Gregor.

**533 Andean Research.** Fall term. Credit four hours. Th 3:35-5:30. Mr. Murra.

**534-535 Southeast Asia: Readings in Special Problems.** 534 Fall term; 535 Spring term. Credit and hours to be arranged. Messrs. Kirsch and Sharp.



**537 Islamic Sects and Religious Movements.** Spring term. Credit four hours. W 3:35–5:30. Mr. Meeker.

**540 South Asia.** Spring term. Credit four hours. T 3:35–5:30. Mr. Hazlehurst.

**[541–542 South Asia: Readings in Special Problems.** 541 Fall term; 542 Spring term. Credit and hours to be arranged. Not offered in 1972–73.]

**[543 China.** Spring term. Credit four hours. Not offered in 1972–73.]

**[545 Japan.** Fall term. Credit four hours. Not offered in 1972–73.]

**548 Comparative Studies in Complex Societies: Agrarian Civilizations.** Spring term. Credit four hours. F 3:35–5:30. Mr. Hazlehurst.

**[564 Problems in Archaeology: Europe.** Fall term. Credit four hours. Not offered in 1972–73.]

**[567 Origins of Mesoamerican Civilization.** Fall term. Credit four hours. Not offered in 1972–73.]

**573 Human Adaptation.** Fall term. Credit four hours. T 3:35–5:30. Mr. Thomas.

**575 Physical Anthropology: History and Theory.** Spring term. Credit four hours. Th 3:35. Mr. Kennedy.

**[576 Physical Anthropology: Problems, Methods, and Theory.** Spring term. Credit four hours. Not offered in 1972–73.]

**[578 Palaeoanthropology: South Asia.** Spring term. Credit four hours. Not offered in 1972–73.]

**598–599 The Teaching of Anthropology.** 598 Fall term; 599 Spring term. May only be taken in sequence. Credit two hours. Hours to be arranged. Staff.

**601–602 Field Research.** 601 Fall term; 602 Spring term. Either or both terms. Credit to be arranged. Staff.

## Archaeology

Archaeology is taught in several departments within the University. Any undergraduate, regardless of his major, may elect a *concentration* in archaeology. The provisions of the concentration are: (a) Completion of Introduction to Archaeology with a grade of S. (b) Completion of at least four additional courses in archaeology chosen from the offerings of two or more departments. (c) Participation in an archaeological excavation either at a summer field school or at a research excavation approved in advance by the concentration adviser. This provision may be waived at the discretion of the adviser.

A student should select an adviser. Concentration advisers are: R. Ascher (anthropology), A. L. Bloom (geological sciences), J. E. Coleman (classics), J. S. Henderson (anthropology), S. W. Jacobs (architecture), T. F. Lynch (anthropology), S. J. O'Connor (history of art), G. W. Olson (soil science), I. Rabinowitz (Biblical and Hebrew studies), J. F. Scott (history of art).

**[200 Introduction to Archaeology.** Spring term. Credit three hours. S–U grades only. Open to all students whether or not they elect the concentration. Enrollment limit: 170 students. Not offered in 1972–73.]

**300 Individual Study in Archaeology and Related Fields.** Fall term. Credit to be arranged. Prerequisite: Archaeology 200 and consent of instructor. Hours to be arranged. Concentration advisers.

Topics of particular interest to the student pursued by him with the guidance of a faculty member.

**The Discovery of the Americas (Anthropology 150).**

**Introduction to Classical Archaeology (Classics 220).**

**Introduction to Art History: Beginnings of Civilization (History of Art 210).**

**Prehistoric Archaeology (Anthropology 303).**

**[Prehistoric Art (History of Art 313).** Not offered in 1972–73.]

**Aegean Art and Archaeology (Classics 319).**

**[Art and Archaeology of Classical Greece (Classics 320).** Not offered in 1972–73.]

**[Greek Sculpture (Classics 431 and History of Art 431).** Not offered in 1972–73.]

**Arts of the Roman Empire (History of Art 322).**

**Comparative Civilizations (Anthropology 350).**

**Archaeology of the Americas I (Anthropology 354).**

**Archaeology of the Americas II (Anthropology 355).**

**Mesoamerican Thought and Culture (Anthropology 356).**

**Pre-Columbian Art (History of Art 315).**

**[Numismatics (History of Art 521).** Not offered in 1972–73.]

**[Ceramics (History of Art 523).** Not offered in 1972–73.]

**[The Ancient Near East (Architecture 430, College of Architecture, Art, and Planning).** Not offered in 1972–73.]

**[The Classical World (Architecture 431, College of Architecture, Art, and Planning).** Not offered in 1972–73.]

**Tin\*Can Archaeology (Anthropology 450).**

**Archaeological Boundaries: The Arts (Anthropology 451).**

**Archaeological Boundaries: The Sciences (Anthropology 452).**

**Architectural Aspects of Archaeological Fieldwork (Architecture 460, College of Architecture, Art, and Planning).**

**Design and Conservation (Architecture 465; P.P.R.A. 644, College of Architecture, Art, and Planning).**

**Documentation for Preservation Planning (Architecture 466; P.P.R.A. 645, College of Architecture, Art, and Planning).**

**[Traditional Arts in Southeast Asia (History of Art 488).** Not offered in 1972–73.]

**Seminars in Archaeology (Anthropology 493–494).**

## Asian Studies

Messrs. B. R. Anderson, D. E. Ashford, N. C. Bodman, H. R. Capener, N. R. Chen, R. D. Colle, Mrs. A. R. Cook, Messrs. D. R. DeGlopper, A. T. Dotson, J. M. Echols, C. E. Elliott, E. C. Erickson, H. Feldman, J. W. Gair, M. D. Glock, F. H. Golay, A. B. Griswold, D. G. E. Hall, L. W. Hazlehurst, M. Hugo-Brunt, R. B. Jones, Jr., Mrs. E. H. Jorden, Messrs. G. McT. Kahin, G. B. Kelley, K. A. R. Kennedy, A. T. Kirsch, T. C. Liu, J. McCoy, T. L. Mei, J. W. Mellor, D. P. Mozingo, S. J. O'Connor, C. A. Peterson, R. M. Quinn, H. Shadick, L. Sharp, J. T. Siegel, R. J. Smith, Mrs. E. Terasaki, Messrs. J. U. Wolff, O. W. Wolters, K. M. Wong, D. K. Wyatt, M. W. Young.

The applicant for admission to the major in Asian Studies must have completed at least one course selected from among those listed under the Department of Asian Studies and must be recommended by the instructor in charge of that course. He must have received a minimum grade of C in this and in all other courses taken in the Department.

The candidate for the A.B. degree with a major in Asian Studies is required to complete two courses at the 200 level in one of the Asian languages offered at Cornell. The major consists of at least thirty additional hours (which may include further language work), selected by the student in consultation with his adviser from among the courses listed under the Department of Asian Studies numbered 300 and above. Majors normally concentrate their work in at least one of the disciplines and in one of the following areas: China, Japan, South Asia, Southeast Asia. The student may also be encouraged to consider the possibility of a double major combining Asian Studies with one of the disciplines.

## The Honors Program

The candidate for Honors must maintain a cumulative average of B in courses in the humanities and social sciences. He must also maintain an average of B in courses in the Department. The Honors candidate should take at least one of the seminars selected from those listed below in consultation with his adviser. The student may, with the approval of his adviser, substitute for this last requirement an advanced course in which he completes a considerable body of independent work.

The Honors candidate will also take Asian Studies 402 in which he writes his senior essay. He may also enroll in Asian Studies 401 in his senior year but this course is not required of him. At the end of his junior year, the student should consult with the professor with whom he plans to write his paper.

### Distribution Requirement

The Distribution requirement in the humanities may be satisfied in Asian Studies by any 300-level courses listed under Asian Studies which total at least six hours and form a sequence.

## Asian Literature

**371 Chinese Philosophical Literature.** Fall term. Credit four hours. M W F 10:10. Mr. Mei.  
Readings in English translation of Confucian, Taoist, and Buddhist works.

**372 Chinese Imaginative Literature.** Spring term. Credit four hours. M W F 10:10. Mr. Wong.  
Readings in English translation of poetry, classical prose, fiction, and drama.

**373 Twentieth-Century Chinese Literature.** Fall term. Credit four hours. M W F 9:05. Mr. Wong.  
A study of the modern vernacular that has reflected and promoted political, social, and cultural change in China.

**375 Japanese Literature before 1603.** Fall term. Credit four hours. M W F 11:15. Mrs. Terasaki.  
Readings in English translation. Early poetry and prose; court diaries, *Pillow Book* of Sei Shōnagon, *Tale of Genji*; war epics, Nō drama; linked-verse.

**376 Japanese Literature from 1603 to the Present.** Spring term. Credit four hours. M W F 11:15. Mrs. Terasaki.  
Readings in English translation. Popular novels, puppet and Kabuki plays, and haiku of the Tokugawa period (1603–1867); Meiji and later Western-influenced novels and poetry.

**377 Japanese Drama.** Fall term. Credit four hours. M W F 1:25. Mrs. Terasaki.  
Readings in English translation. Nō Kabuki, and puppet plays. Lectures and discussions.

**[379 Southeast Asian Literature.** Fall term. Credit four hours. T 2:30–4:25. Mr. Echols. Not offered 1972–73].

## Asia, General Courses

**Economics of Agricultural Development (Agricultural Economics 464, College of Agriculture and Life Sciences).**

**World Food Economics (Agricultural Economics 560, College of Agriculture and Life Sciences).**

**Communication in the Developing Nations (Communication Arts 524, College of Agriculture and Life Sciences).**

**Comparative Mass Media (Communication Arts 526, College of Agriculture and Life Sciences).**

**Applications of Sociology to Development Programs (Rural Sociology 528, College of Agriculture and Life Sciences).**

**Comparative Religious Systems (Anthropology 322).**

**Myth, Ritual, and Symbol (Anthropology 424).**

**Culture Processes: The Fate of Peasantries in the Modern World (Anthropology 518).**

**Architecture and Planning in the Orient (Architecture 435/Planning 704, College of Architecture, Art, and Planning).**

**[Politics and Modernization (Government 338). Not offered in 1972–73.]**

**Political Role of the Military (Government 349).**

**Comparative Revolutions (Government 350).**

**The United States and Asia (Government 377).**

**Seminar in Political Development and Social Change (Government 537).**

**Seminar in the Politics of Development (Government 543).**

**Seminar in Comparative Communism (Government 548).**

**Seminar in the International Relations of Asia (Government 577).**

**Introduction to Asian Civilizations: Origin to 1600 (History 205).**

**Introduction to Asian Civilizations: From 1600 (History 206).**

**Supervised Reading (History 511–512).**

**Introduction to Art History: Asian Traditions (History of Art 280).**

**[Comparative Genres in East-West Art (History of Art 380). Not offered in 1972–73.]**

**Studies in Indian and Southeast Asian Art (History of Art 386).**

**[Ceramic Art of Asia (History of Art 482). Not offered in 1972–73.]**

**Studies in Buddhist Art (History of Art 483).**

**[Problems in Asian Art (History of Art 580). Not offered in 1972–73.]**

**401 Asian Studies Honors Course.** Fall term. Credit four hours. Staff. Intended for seniors who have been admitted to the Honors program.

Supervised reading and research on the problem selected for Honors work.

**402 Asian Studies Honors: Senior Essay.** Either term. Credit four hours. Prerequisite: admission to the Honors program.

The student, under faculty direction, will prepare an Honors essay.

**403–404 Asian Studies Supervised Reading.** Either or both terms. Credit to be arranged. Prerequisite: consent of the instructor. Open to majors and other qualified students. Provides the opportunity to read intensively under the direction of a member of the staff.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**591-592 Seminar: Field Research.** Throughout the year. Staff.

Field research seminars for selected students are conducted in South Asia, Southeast Asia, Hong Kong, Taiwan, or Japan by staff members who are themselves working in these areas.

## China

### Area Courses

**Traditional Chinese Society and Culture** (Anthropology 343).

**Modern Chinese Society** (Anthropology 344).

[China (Anthropology 543). Not offered in 1972-73.]

**Introduction to the Economy of China** (Economics 369).

**Seminar: The Economy of China** (Economics 676).

**The Foreign Policy of China** (Government 478).

**Supervised Readings** (Government 499).

**Seminar in Communist China in International Politics** (Government 583).

**History of Chinese Civilization prior to the Nineteenth Century** (History 393).

**History of Chinese Civilization: Nineteenth and Twentieth Centuries** (History 394).

**The Medieval Chinese World** (History 492).

**Chinese Historiography and Source Materials** (History 591).

**Modernization of China** (History 593-594).

**Seminar in Medieval Chinese History** (History 691-692).

**Seminar in Modern Chinese History** (History 693-694).

**Art of China** (History of Art 383).

[Chinese Painting (History of Art 385). Not offered in 1972-73.]

[Problems in Chinese Art (History of Art 584). Not offered in 1972-73.]

[Studies in Chinese Painting (History of Art 586). Not offered in 1972-73.]

**Seminar on Law in Traditional Chinese Society** (Society for the Humanities 413).

**Seminar on Law and Society in Imperial China** (Society for the Humanities 414).

Other courses dealing extensively with China are Anthropology 322, 518; Government 338, 349, 350, 377, 548; History 205, 206; History of Art 280, 380, 482, 483; and Architecture 435/Planning 704 (College of Architecture, Art, and Planning).

### Language and Linguistics Courses

**Basic Course** (Chinese 101-102).

**Cantonese Basic Course** (Chinese 101C-102C).

**Elementary Hokkien Chinese** (Chinese 131H-132H).

**Intermediate Chinese I** (Chinese 201-202).

**Intermediate Cantonese** (Chinese 201C-202C).

**Chinese Conversation** (Chinese 203-204).

**Introduction to Classical Chinese** (Chinese 213-214).

**Intermediate Chinese II** (Chinese 301).

**Intermediate Chinese III** (Chinese 302).

**Chinese Philosophical Texts** (Chinese 314).

**T'ang and Sung Poetry** (Chinese 320).

**History of the Chinese Language** (Chinese 401-402).

**Linguistic Structure of Chinese: Phonology and Morphology** (Chinese 403).

**Linguistic Structure of Chinese Syntax** (Chinese 404).

**Chinese Dialects** (Chinese 405).

**Advanced Readings in Modern Chinese** (Chinese 411-412).

**Classical Chinese Prose** (Chinese 413).

**Pre-T'ang Poetry** (Chinese 416).

**Chinese Poetic Drama** (Chinese 418).

[Traditional Fiction (Chinese 420). Not offered in 1972-73.]

**Directed Study** (Chinese 421-422).

[Readings in Shorter Works of Fiction (Chinese 423). Not offered in 1972-73.]

[Readings in Literary Criticism (Chinese 424). Not offered in 1972-73.]

**Readings in Folk Literature** (Chinese 430).

[Seminar in Chinese Poetry and Poetics (Chinese 503). Not offered in 1972-73.]

**Seminar in Chinese Fiction** (Chinese 505).

**Seminar in Chinese Folk Literature** (Chinese 509).

**Advanced Directed Reading** (Chinese 521-522).

**Sino-Tibetan Linguistics** (Linguistics 582).

## Japan

### Area Courses

**Japanese Culture and Society** (Anthropology 345).

**Art of Japan** (History of Art 384).

[Masters of Japanese Prints (History of Art 481). Not offered in 1972-73.]

**Directed Studies: Japanese Labor Relations** (Industrial and Labor Relations 499).

Other courses dealing extensively with Japan are Anthropology 322, 518; Government 349, 377, 577; History of Art 280, 380, 482, 483, 580; and Architecture 435/Planning 704 (College of Architecture, Art, and Planning).

### Language Courses

**Basic Course** (Japanese 101-102).

**Elementary Reading** (Japanese 201-202).

**Intermediate Conversation** (Japanese 203-204).

**Intermediate Reading** (Japanese 301-302).

**Introduction to Literary Japanese** (Japanese 305-306).

**Advanced Reading** (Japanese 401-402).

**Linguistic Structure of Japanese** (Japanese 404).

**Intermediate Literary Japanese** (Japanese 405-406).

**Directed Readings** (Japanese 421-422).

**Introduction to Japanese Reading for Students of Chinese** (Japanese 431-432).

## South Asia

### Area Courses

The Agricultural Development of South Asia (Agricultural Economics 664, College of Agriculture and Life Sciences).

Comparative Religious Systems: South Asia (Anthropology 322).

Culture and Society in South Asia (Anthropology 341).

Seminar: South Asia (Anthropology 540).

South Asia: Readings in Special Problems (Anthropology 541–542).

[Palaeoanthropology: South Asia (Anthropology 578). Not offered in 1972–73.]

Studies in Indian and Southeast Asian Art (History of Art 386).

[India as a Linguistic Area (Linguistics 331). Not offered in 1972–73.]

[Indo-Aryan Structures (Linguistics 432). Not offered in 1972–73.]

[Dravidian Structures (Linguistics 436). Not offered in 1972–73.]

Comparative Indo-European Linguistics (Linguistics 521).

[Elementary Pali (Linguistics 530). Not offered in 1972–73.]

[Elementary Sanskrit (Linguistics 531–532). Not offered in 1972–73.]

Comparative Indo-Aryan (Linguistics 534).

Comparative Dravidian (Linguistics 536).

Seminar in South Asian Linguistics (Linguistics 600).

Directed Research (Linguistics 615–616).

Other courses dealing extensively with South Asia are Anthropology 518; Government 338, 377; History of Art 280, 380, 386, 482, 483, 580; Agricultural Economics 464; Communication Arts 524, 526; and Rural Sociology 528 (College of Agriculture and Life Sciences).

### Language Courses

Basic Course (Hindi-Urdu 101–102).

Hindi Reading (Hindi 201–202).

Hindi Composition and Conversation (Hindi 203–204).

Readings in Hindi Literature (Hindi 301–302).

Advanced Composition and Conversation (Hindi 303–304).

Advanced Hindi Readings (Hindi 305–306).

History of Hindi (Hindi 401).

Basic Course (Sinhalese 101–102).

Sinhalese Reading (Sinhalese 201–202).

Basic Course (Tamil 101–102).

Basic Course (Telugu 101–102).

Telugu Reading (Telugu 201–202).

## Southeast Asia

### Area Courses

Comparative Religious Systems: Southeast Asia (Anthropology 322).

[Ethnology of Island Southeast Asia (Anthropology 334). Not offered in 1972–73.]

Ethnology of Mainland Southeast Asia (Anthropology 335).

Myth, Ritual, and Symbol (Anthropology 424).

Southeast Asia: Readings in Special Problems (Anthropology 534–535).

Seminar: Southeast Asia (Asian Studies 501–502).

Southeast Asia Research Training Seminar (Asian Studies 676).

[Southeast Asian Literature in Translation (Comparative Literature 379). Not offered in 1972–73.]

Economic Policy and Development in Southeast Asia (Economics 365).

Economic Growth in Southeast Asia (Economics 678).

Government and Politics of Southeast Asia (Government 344).

Honors Tutorials (Government 493).

Honors Thesis (Government 494).

Seminar in Political Problems of Southeast Asia (Government 644).

Southeast Asian History to the Fourteenth Century (History 495).

Southeast Asian History from the Fifteenth Century (History 496).

Southeast Asia in the Nineteenth Century (History 497).

Supervised Reading (History 511–512).

Seminar: Historiography of Southeast Asia (History 588–589).

Seminar in Southeast Asian History (History 695–696).

[Traditional Arts in Southeast Asia (History of Art 488). Not offered in 1972–73.]

[Old Javanese (Linguistics 537–538). Not offered in 1972–73.]

Seminar in Southeast Asian Languages (Linguistics 571–572).

Malayo-Polynesian Linguistics (Linguistics 573–574).

Thai Dialectology (Linguistics 577).

Comparative Thai (Linguistics 578).

Tibeto-Burman Linguistics (Linguistics 579).

Other courses dealing extensively with Southeast Asia are Anthropology 518; Government 338, 349, 350, 377, 577; History 205, 206; History of Art 280, 380, 386, 482, 483, 580; Agricultural Economics 464; Communication Arts 524, 526 (College of Agriculture and Life Sciences); and Architecture 435/Planning 704 (College of Architecture, Art, and Planning).

### Language Courses

Basic Course (Burmese 101–102).

Burmese Reading (Burmese 201–202).

Burmese Composition and Conversation (Burmese 203–204).

Advanced Burmese Reading (Burmese 301–302).

Basic Course (Cebuano [Bisayan] 101–102).

Basic Course (Indonesian 101–102).

Indonesian Reading (Indonesian 201–202).

Indonesian Composition and Conversation (Indonesian 203–204).

Readings in Indonesian and Malay (Indonesian 301–302).



**Advanced Indonesian Conversation and Composition (Indonesian 303–304).**

**Advanced Readings in Indonesian and Malay Literature (Indonesian 305–306).**

**Linguistic Structure of Indonesian (Indonesian 403).**

**Elementary Javanese (Javanese 131–132).**

**Intermediate Javanese (Javanese 133–134).**

**Basic Course (Tagalog 101–102).**

**Tagalog Reading (Tagalog 201–202).**

**Linguistic Structure of Tagalog (Tagalog 403).**

**Basic Course (Thai 101–102).**

**Thai Reading (Thai 201–202).**

**Thai Composition and Conversation (Thai 203–204).**

**Advanced Thai (Thai 301–302).**

**Thai Literature (Thai 305–306).**

**Directed Individual Study (Thai 405–406).**

**Basic Course (Vietnamese 101–102).**

**Vietnamese Reading (Vietnamese 201–202).**

**Vietnamese Composition and Conversation (Vietnamese 203–204).**

**Advanced Vietnamese (Vietnamese 301–302).**

**Vietnamese Literature (Vietnamese 305–306).**

**Directed Individual Study (Vietnamese 405–406).**

## Astronomy

Mr. M. Harwit, Chairman; Messrs. F. Drake, P. Gierasch, T. Gold, T. Hagfors, J. Houck, D. L. Jauncey, C. Sagan, E. Salpeter, Y. Terzian, R. Wagoner.

Undergraduates interested in graduate work in astronomy should major in either physics or mathematics and take astronomy courses as electives. Graduate students must register with the instructor in charge of the desired course on regular registration days at the beginning of each term.

## Distribution Requirement

The Distribution requirement in physical sciences is met in Astronomy 101–102.

**101 The World: Universe, Earth, Environment.** Fall term. Credit four hours. Lectures, M W F 9:05. Laboratory, M T Th or F 2–4:25. Messrs. Houck and Harwit. How do we measure the size of our galaxy and the size of the Universe? What is the mass of the Universe and how can we measure it? Is the Universe round or flat? Does the behavior of light and of electrons change, with the large scale evolution of the Universe? How are the stars born, why do they shine and how do they die? Why are there different kinds of stars? What are the chemical elements and how were they formed in stars? Does the Universe begin, evolve and die—or has it always existed and will it always continue?

**102 The World: Universe, Earth, Environment.** Spring term. Credit four hours. Lectures, M W F 9:05. Laboratory, M T Th or F 2–4:25. Messrs. Drake and Sagan. How was the solar system formed? What are the environments of other planets like? What is the basic structure of the inside of the Earth? Of our atmosphere? How about the other planets? How did the Earth's surface and climate evolve? Will Man catastrophically alter the Earth? How did life arise? Does life exist elsewhere

in the Universe? Does intelligent life exist elsewhere? How can we find out?

**332 Elements of Astrophysics.** Fall term. Credit three hours. Prerequisites: calculus and a course in modern physics. M W F 11:15. Mr. Terzian. Physical laws of radiation. Size, mass, and age of stars, galaxies, and the Universe; stellar evolution and the formation of heavy chemical elements; interstellar matter and star formation. Pulsars and quasars. An introduction to cosmology. This course is of particular value to students in fields related to astronomy and space science.

**340 Special Topics in Astronomy.** Either term. Credit two to four hours. Prerequisite: consent of the instructor. Staff.

Instruction in selected topics for qualified students according to their needs and preparation. Observational techniques and instrumentation. Binary stars, orbital computation, coordinate measurement, photometry, and spectroscopy. Special attention to the problems of science teachers.

**431 Introduction to Astrophysics and Space Science.** Fall term. Credit three hours. Prerequisites: physics 225, 226, and 303 or the equivalent. M W F 10:10. Mr. Harwit.

Dynamics of planetary and stellar systems. Interstellar magnetic fields, cosmic rays and radio emission. Comets, meteorites, and micrometeorites. This course is intended for advanced undergraduate and new graduate students who intend to pursue careers in astronomy and space science.

**432 Introduction to Astrophysics and Space Science.** Spring term. Credit three hours. Prerequisite: astronomy 431 or consent of the instructor. M W F 10:10. Mr. Harwit. Interstellar dust and gas. Evolution of the Strömgren sphere. Star formation. Stellar structure and evolution. Binary, variable, and peculiar stars. Nuclear synthesis in stars. Stellar atmospheres. Abundance of the chemical elements. Interplanetary gas and dust. This course is intended for advanced undergraduate and new graduate students who intend to pursue careers in astronomy and space science.

For complete descriptions of the following graduate courses see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**509 Theory of Gravitation.**

**510 Cosmology and Relativistic Astrophysics.**

**520 Observational Radio and Infrared Astronomy.**

**521 Radio and Infrared Astronomy: Interstellar Medium, Pulsars, Galaxies, Quasars.**

**530 Nuclear Astrophysics.**

**550 Radiative Transfer, Stellar and Solar Atmospheres.**

**560 Theory of Stellar Structure and Evolution.**

**570 Physics of the Planets.**

**571 Planetary Rotation, Tides, and Physics of Interiors.**

**575 Motions in Planetary Atmospheres.**

**579 Celestial Mechanics.**

**620 Seminar: Advanced Radio Astronomy.**

**633 Seminar: Infrared Astronomy.**

**640 Advanced Study and Research.**

**671 Special Problems in Planetary Astronomy.**

**672 Seminar: Planetary Studies.**

**673 Seminar: Current Problems in Planetary Fluid Dynamics.**

**675 Solar System Magnetohydrodynamics.****680 Seminar: Cosmic Rays and High Energy Astrophysics.****699 Seminar: Current Problems in Theoretical Astrophysics.**

## Biological Sciences

Mr. R. D. O'Brien, Director; Mr. R. S. Marshall, Assistant for Academic Affairs; Messrs. M. Alexander, H. Ambrose, J. Anderson, H. Banks, J. Barlow, D. Bates, A. Bensadoun, C. Berg, A. Blackler, W. Brown, P. Bruns, P. Brussard, T. Cade, J. Calvo, J. Camhi, R. Capranica, L. Carmichael, R. Clausen, R. Clayton, L. Cole, C. Comar, Miss Louise Daniel, Messrs. P. Davies, E. Delwiche, W. Dilger, S. Edelstein, T. Eisner, M. Eldefrawi, S. Emlen, H. Everett, Mrs. Karen Feeny, Mr. P. Feeny, Mrs. June Fessenden-Raden, Messrs. G. Fink, R. Foote, E. Gasteiger, J. Gaylor, Mrs. A. Jane Gibson, Messrs. Q. Gibson, P. Gilbert, J. Gillespie, R. Grossfeld, R. Hallberg, B. Halpern, G. Hammes, W. Hansel, L. Heppel, G. Hess, P. Hinkle, H. Howland, J. Hudson, A. Jagendorf, W. Keeton, Miss Elizabeth Keller, Messrs. K. Kennedy, J. Kingsbury, G. Knaysi, R. Korf, D. Lancaster, E. Lemon, E. Lenneberg, S. Leonard, S. Levin, G. Likens, R. MacDonald, R. MacIntyre, P. Marks, R. McCarty, D. McCormick, W. McFarland, R. Millar, L. Miller, K. Moffat, H. Moore, R. Morison, H. Naylor, A. Neal, W. Nelson, J. Novak, D. Paolillo, M. Parthasarathy, D. Pimentel, T. Podleski, F. Pough, E. Racker, E. Raney, D. Robson, R. Root, Mrs. Miriam Salpeter, Messrs. G. Schatz, G. Schmidt, H. Seeley, L. Slobin, R. Spanswick, A. Srb, F. Steward, W. Stini, H. Stinson, E. Stone, D. Tapper, R. Thomas, J. C. Thompson, J. F. Thompson, B. Travis, C. Uhl, L. Uhler, P. VanDemark, A. vanTienhoven, W. Visek, B. Wallace, J. Wells, D. Wharton, J. Whitlock, R. Wittaker, H. Williams, D. Wilson, W. Wimsatt, L. Wright, R. Wu, S. Zahler, D. Zilversmit, R. Zollinhofer.

Students will be provisionally accepted in the Biological Sciences specialization as established by the Division of Biological Sciences during their freshman or sophomore years: application should be made to the Division of Biological Sciences Office. Prior to the senior year the student must have written approval of the Division of Biological Sciences of his admission to the major. Final admission to the specialization will require completion of:

- (1) a year of biology (Biological Sciences 101–102 and 101L–102L; 101–102, if taken before 1971–72. Advanced Placement may be allowed at the student's choice, on receipt of a score of 5 in the Princeton Advanced Placement Test or a score of 3 or 4 and completion of Biological Sciences 105);
- (2) a year of general chemistry (preferably Chemistry 107–108 or 115–116);
- (3) a year of college mathematics including at least one semester of calculus (e.g. Mathematics 105–106, 111–112, 111–122 or 107–111).

Whenever possible, the student should include the above three subjects in his freshman schedule and complete organic chemistry and genetics in the sophomore year. A student is not encouraged to undertake a specialization in biological sciences unless his performance in the above courses gives evidence of capacity to do satisfactory work at a more advanced level.

In addition to the introductory courses in chemistry, biological sciences, and mathematics, each specializing student must complete the following:

- (1) Chemistry 353–355 (or 355 and 357–358, or 353–301, or 357–358–301);
- (2) a year of physics (Physics 101–102 or 207–208);
- (3) Biological Sciences 281 (Genetics);

- (4) Biological Sciences 431 (Biochemistry);
- (5) the breadth requirement outlined below;
- (6) one of the concentration areas outlined below; and
- (7) a minimum of six hours of college credit in a foreign language. It is recommended that the language requirement be met with French, German, Japanese, or Russian (other languages may be substituted only with special permission). Qualification in a foreign language, as defined by the College of Arts and Sciences, meets the Division's language requirement. Students anticipating a concentration in biochemistry should contact an adviser in biochemistry as soon as possible.

The breadth requirement is designed to insure that each major student becomes familiar with a minimum number of different aspects of modern biology. In fulfillment of this requirement, each student must pass one of the listed courses in two of the following eight categories:

- (1) *Neurobiology and Behavior*. Biological Sciences 320, 421; Psychology 201, 323;
- (2) *Developmental Biology*. Biological Sciences 347A and B, 386;
- (3) *Ecology and Evolution*. Biological Sciences 261, 301, 361, 475;
- (4) *Microbiology*. Biological Sciences 290A;
- (5) *Morphology*. Biological Sciences 273, 313, 316, 345; Plant Pathology 309;
- (6) *Physical Science and Mathematics*: Chemistry 389; Geology 101; Math 213 or 221; Physics 360; Statistics 407, 408 or 510; Computer Science 201, 202, 311;
- (7) *Physiology*. Biological Sciences 242, 340, 410, 414; Veterinary Medicine 311, 312;
- (8) *Taxon-oriented courses*. Biological Sciences 371, 344, 470, 471, 472, 474; Entomology 212.

The concentration requirement is designed to help the student achieve depth in some area of biology of his own choosing. It permits maximum flexibility, while ensuring that the selection of advanced courses will form a coherent and meaningful unit. The student should seek the advice of his adviser, in selecting the courses he will take in fulfillment of both the breadth and concentration requirements.

No more than four credit hours of research courses can be used for completion of the requirements in the area of concentration. The possible concentration areas are:

- (1) *Animal Physiology and Anatomy*: Twelve hours, usually selected from Biological Sciences 273, 313, 316, 386, 410, 410A, 412, 414, 419 or 512; Animal Science 427–428; Poultry Science 425, 520; Veterinary Medicine 924.
- (2) *Neurobiology and Behavior*: Biological Sciences 320, at least one semester of 620, and eleven hours, including a second course in Neurobiology, to be selected in consultation with the adviser.
- (3) *Biochemistry*: the student must fulfill the organic chemistry requirement by taking Chemistry 301, 302, 357, 358. In addition the student must take Chemistry 389 and 390, Biological Sciences 433 or 434.
- (4) *Botany*: Biological Sciences 242 (or 340), 345, 347 and 371.
- (5) *Ecology and Evolution*: at least 13 hours. Student must include Biological Sciences 361 and 475; one course from the following three: Biological Sciences 462 (not 462A), 463, 468; and a physiology course. At least four laboratory courses must be included, but students may count two courses taken as breadth requirement as laboratory requirement. Students planning graduate study are strongly urged to take a course in statistics (ILR 210 or 311).
- (6) *Genetics and Development*: Nine hours usually selected from the following: Biological Sciences 280, 347A, 347B, 386, 387, 440, 441, 475, 480, 484, 488, 495A, 495B; Statistics 510; Plant Breeding 505.
- (7) *Microbiology*: Biological Sciences 290A and B plus

three courses in microbiology of which at least one must be selected from among the following: Biological Sciences 391B, 394, 490B, 495B or Veterinary Medicine 341. This requirement may not itself satisfy the requirements for certification by the American Academy of Microbiology.

Students who, for good reason, wish to undertake a course of studies not covered by these seven concentration areas may petition for permission to do so.

Students interested in teaching biology in secondary schools may specialize in biological sciences for the B.S. degree and then complete the requirements for the M.A.T. (Master of Arts in Teaching) degree during a fifth year in the Graduate Field of Education. The fifth year includes one semester of graduate study in the sciences, a summer of preparation for teaching, and one semester of internship in a secondary school. Stipends and fellowship support are available to selected candidates in the fifth year. Students interested in the five-year program leading to secondary school teaching are urged to consult their adviser and an adviser in the Department of Education during their freshman year. Courses appropriate to the student's program are described in the Education Announcement.

## The Honors Program

The Honors Program offers a student an opportunity to do independent work under the supervision of a member of the faculty. This entails independent laboratory work on a project in addition to writing a thesis. Candidates for this program must have at least a 3.0 cumulative average, although the committee will entertain petitions for special cases. He must also obtain a sponsor in a biology-oriented basic or applied science within the University. An Honors candidate will ordinarily enroll for credit in a research course under the direction of the faculty member acting as his Honors supervisor. No more than four credit hours of research courses can be used for completion of the requirements in the area of concentration. Recommendation to the faculty that a candidate graduate with Honors will be the responsibility of the Honors Program Committee. Students interested should consult their adviser for further details, preferably during the first term of the junior year.

Registration in the Office of the Division for the Honors Program can be no later than the first term of the senior year. The final report of the student's work must be in the hands of the Committee not later than the first day of the study period to the week of final examinations.

Many decisions pertaining to curriculum, to Division-wide requirements, and to depth and breadth areas, are made by the Curriculum Committee of the Division. The Committee has faculty and elected student members, and welcomes advice and suggestions from all interested parties. The Division Office will supply information on Committee affairs.

## Distribution Requirement

The Distribution requirement in biological sciences is satisfied by Biological Sciences 101, 101L and 102, 102L; Biological Sciences 107-108; advanced placement with a score of 3 or 4 plus Biological Sciences 105; or advanced placement with a score of 5.

## General Courses

**101-102 Biological Sciences.** 101 Fall term only; 102 Spring term only. Credit two hours a term. Must be taken concurrently with 101L and 102L. Biological Sciences

101 is prerequisite to Biological Sciences 102, unless special permission is obtained from the instructor. 101-102 cannot be taken for credit after 107-108. Lectures, M W 9:05. Two preliminary examinations will be given each term at 7:30 in the evening. Mrs. Feeny.

Designed both for students who intend to specialize in biological sciences and for those specializing in other subjects, such as the social sciences or humanities, who want to obtain a thorough knowledge of biology as part of their general education. Plant and animal materials are considered together rather than in separate units. The fall semester covers the origin of life, cellular biology, evolutionary patterns in the plant and animal kingdoms, the biochemistry of metabolism, physiology and anatomy. The spring semester covers behavior, genetics, developmental biology, evolutionary theory and the biology of populations and communities. Each topic is considered in the light of modern evolutionary theory.

**101L-102L Biological Sciences, Laboratory.** 101L Fall term only; 102L Spring term only. Credit two hours a term. Must be taken concurrently with 101 and 102. This course will consist of one three-hour laboratory each week as well as a weekly lecture section for discussions, special lectures, etc. Lecture, F 9:05, rooms to be assigned. Laboratory, M T W or Th 1:25-4:25, or T Th or F 10:10-1:00, or S 9:05-11:55, or M T or W 7:30-10:20 p.m. Mr. Ambrose, Mr. Zollinhofer, and Assistants. Fall term: The general concepts of biology with particular emphasis on socially relevant topics will be covered. Optional areas of approach will be Biological Survey, Environmental Biology, and Experimental Biology. Spring term: A continuation of the laboratory approaches in 101L. In addition, laboratory sections may be offered that approach biology from several diverse viewpoints drawn from the following options: plant physiology, environmental physiology, molecular biology, morphology, zoology, neurobiology and behavior, population biology, and ecology.

**105 Biological Discovery.** Fall term. Two lectures and two laboratories weekly. T Th 9:05. Open to freshmen who achieve grades 3, 4 or 5 on either the biology advanced placement exam of the College Entrance Examination Board (ETS, Princeton, N.J.) or an advanced placement exam administered during freshman orientation week. Also open to transfer students with one semester of college biology who attained a grade of 3, 4, or 5 on the freshman orientation week advanced placement exam. Not open to students who have credit for more than one semester of introductory biology. Limited to 60 students. Not open to students who have credit for 101-102 or 107-108. Passing 105 comprises fulfillment of introductory biology requirements in terms of (1) electing more advanced biology courses, and (2) fulfilling the biology distribution requirement for nonmajors. Students with advanced placement grades of 5 receive six credits for previous work in biology and are permitted to exempt all introductory courses including Biological Sciences 105. If they take and pass 105, they receive an additional four credits. Students with advanced placement grades of 3 or 4 receive three credits for previous work in biology plus four credits for passing Biological Sciences 105. Mr. Camhi.

The course is designed to instruct students in the ways that scientists ask questions about living things and design and carry out observations or experiments to answer these questions. In the laboratory, students will work in small groups on extended research problems which they will help design. Instruction will be highly individualized and will aim at improving each student's ability to ask meaningful questions, organize and quantify his observations, analyze his research data, and relate his results to previously reported biological findings. Specific research techniques will be introduced when need arises. Lectures, which will expand the scope of the

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laboratory experience, will treat the conceptual and technical underpinnings of biological science, illustrating these with examples from diverse animal and plant disciplines. Biological content will stress properties and processes common to a wide range of living organisms, rather than focusing narrowly upon specific topics. It is hoped that this course will be useful to both potential scientists and to others wishing to attain a deeper insight into the nature of biological science.

**106 Interactive Computing for Students of Biological Sciences.** Spring term. Credit one hour. Lectures every other week, T 1:30. Mr. Howland.

An introduction to computing using the interactive language FOCAL with a discussion of other algebraic computing languages such as BASIC and elementary FORTRAN. Students will be issued tickets for five hours of computing time at the Division of Biological Sciences Interactive Computing Facility. Applications to problems in the biological sciences will be emphasized.

**107-108 Biology for Non-Majors.** 107 Fall term only; 108 Spring term only. Credit three hours a term. Limited to 560 students. This course can be used to fulfill the Distribution Requirement in the Colleges of Arts & Sciences and Agriculture & Life Sciences, but may not be used as an introductory course for the major in biological science. Students who are uncertain of their choice of major should register in course 101-102. Note that course 107-108 may not always satisfy as a prerequisite to second and third level courses in biology. Attendance in 107 is requisite for registration in 108, unless special consent is obtained from the instructor. May not be taken for credit after 101-102. Lectures, M W F 9:05 or 11:15. Conferences, M T W Th or F 2:00-4:15. Students do not preregister for the conferences; assignments will be made at the end of the first week of the semester. Each student must attend a conference on alternate weeks. Two preliminary examinations will be given each term at 7:30 in the evening; the dates are October 11 and November 17, 1972, and February 21 and April 2, 1973. No lectures will be given on these examination days. Mr. Blackler.

This course offers students who plan *not* to major in biological sciences the opportunity of taking a broad introductory course in modern biology, without the necessity of performing the detailed and formal laboratory study normally required. Nevertheless, the presentation is neither a course in social biology nor an attempt to popularize biology, but addresses itself to biological principles and phenomena with academic rigor. The content is designed to appeal to anyone who seeks a comprehensive knowledge of biology as part of his general education. Living things of all kinds are used as examples in a biological inventory which includes cellular life, life chemistry, heredity, evolution, and reproduction, as well as coverage of ecology, behavior, and the special case of man. The conference sessions enable small groups of students to meet with the instructor and his assistants, and will be used for discussions and demonstrations.

**201-202 Biology and Society.** 201 Fall term only; 202 Spring term only. Credit two hours per semester. S-U grades only. Evening lectures, M 8. Discussion periods (one hour) to be arranged. Staff and invited speakers. Because the number of students who can be accommodated in Biology 201-202 is dependent upon an unpredictable and variable number of volunteer faculty members, from the many colleges and schools on the Cornell campus, preregistration in this course is not permitted. Registration will be accepted on the Tuesday and Wednesday following the first Monday lecture with preference given to upperclassmen.

A series of public lectures dealing with a variety of topics concerning man as an individual, man as a member of society, and man as a member of the community of life

on earth. The lectures are open to students and nonstudent members of the Cornell community as well as to other Ithaca-area residents. Students enrolling for credit are requested to attend and participate in one of the weekly discussion groups. The purpose of the discussion period is to permit students to explore lecture material of related topics in depth.

**203 Special Topics in Social Biology.** Fall term.

Credit three hours. Time to be arranged. Permission of the instructor is required. Students enrolled in this course are also expected to attend the Biology and Society lectures (Biological Sciences 201) without additional credit. Normally, credit for 203 will count for neither breadth nor concentration requirement in the Biological Sciences curriculum even if the section is under the direction of a biologist, although this restriction may be waived in isolated cases. Simultaneous enrollment in Biological Sciences 201 is not permitted. The purpose of this listing is to provide a vehicle by which any regular faculty member, visiting professor, or postdoctoral fellow with the rank of instructor at Cornell can present a one-semester course in which he discusses problems faced by modern society or guides students in the scholarly investigation of one of these problems.

This course may not be given each fall; information can be obtained by calling the Division of Biological Sciences (6-5233), or the Science, Technology, and Society Program (6-3964).

**204 Special Topics in Social Biology.** Spring term.

Credit three hours. Time to be arranged. Permission of the instructor is required. Students enrolled in 204 are also expected to attend the Biology and Society lectures (Biological Sciences 202) without additional credit. In other respects this course is identical to 203.

**301 Laboratory Methods in Biology.** Either term. Credit three hours. Limited to juniors, seniors, and graduate students, 20 students per section. Prerequisite: 101-102 or equivalent. Scheduled period T or F 10:10-12:35 consists of lecture-demonstration laboratory of work for the following week. Additional periods covered by leaving laboratory open at all times. The equivalent of at least one laboratory period per week required and sometimes several depending on the nature of the work. No formal examinations. Grade is based on required work turned in at the end of the semester. Mr. Uhler.

For students who intend to teach or follow some phase of biology as a profession. Subjects covered: collection, preservation, and storage of materials; the preparation of bird and mammal study skins; injection of circulatory systems with latex; clearing and staining of small vertebrates; and the preparation and staining of squashes, smears, whole mounts, and sections.

**401 Teaching Biology.** Spring term. Credit four hours.

Enrollment limited. Prerequisite: permission to register. Hours to be arranged. Mr. Zollinhofer. Discussions of recent developments in the teaching of biology, and participation in teaching elementary biology at the college level.

**405 Optics in Biology.** Fall term. Credit two hours.

Enrollment limited to 20. Prerequisite: Chemistry 104 or 108, Math 108 or 111, and Physics 102 or 208, or consent of the instructor. M 1:25-3:20. Mr. Clayton. Lectures, problems, demonstrations, and laboratory experience in applications of optics to biology. Topics will include geometrical optics as applied to illumination systems, methods for studying biological effects of light, and analytical uses of optical absorption and fluorescence

**409 Research in Biology.** Either term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material, written permission from the staff member who will supervise the work and assign the grade. Staff.



Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**503 Electron Microscopy for Biologists.** Fall term. Credit three hours. Open to graduate students, with preference given to students who have thesis problems requiring electron microscopy. Permission of the instructor required. Preregistration recommended. Maximum of 8 students. Lecture, T 11:15. Laboratory, T 1:25–4:25 or Th 8–11. Mr. Parthasarathy.

**504 Advanced Electron Microscopy for Biologists.** Spring term. Credit three hours. Prerequisite: 503 and consent of instructor. Maximum of 8 students. Lecture, T 11:15. Laboratory, T 1:25–4:25 or Th 8–11. Mr. Parthasarathy.

**600 Seminar: Current Topics in Modern Biology.** Fall and spring terms. Credit one hour per topic (two topics per term). S-U grades only. The requirement for admission is a B (or better) grade average, or recommendation. Interested students should attend an organizational meeting. The date of this meeting, and the topics to be covered, will be issued in the preregistration supplement to this bulletin. Do not register for course before attending the meeting.

## Animal Physiology and Anatomy

**210 Human Physiology.** Spring term. Credit three hours. No credit for majors in biological sciences. Prerequisite: Chemistry 103 or equivalent; students must at least have taken high school courses in biology and chemistry. Lectures, M W F 8. Messrs. Stini and Thomas. Basic concepts of human anatomy and physiology will be presented to provide the groundwork for the understanding of the functioning of the human body in health and disease. Emphasis will be placed on the relationship of human physiology to problems of public health and contemporary living. The individual systems, such as cardiovascular, gastrointestinal, neurological, endocrine, renal, etc., will be discussed singly and in correlation with each other. Guest lecturers will be invited as appropriate.

**Introductory Physical Biology (Veterinary Medicine 311, Veterinary College).** Fall term. Credit three hours. Prerequisite: basic biology, chemistry, and calculus or permission of the instructor. M W F 10:10. Messrs. Comar and Wasserman.

A basic treatment of the application of physical principles to physiological problems. Coverage includes: mathematical approach to physiological problems; principles of tracers; kinetics; systems analysis and control theory; physiochemical principles; flow of energy in living systems; flow of mass in living systems; contractility.

**Introduction to Animal Physiology (Veterinary Medicine 312, Veterinary College).** Spring term. Credit three hours. Prerequisite: one year of biology and zoology, college courses in chemistry, and basic college mathematics. M W F 11:15. Mr. Craig and others. The course deals especially with the identity and functions of the organ—systems of mammals, ruminant and non-ruminant, with general comparisons to other forms. Particular emphasis is given to circulation, respiration, digestion, excretion, metabolism, and endocrine controls. The lectures, demonstrations, and exercises are intended to serve as a basis for subsequent work in the physiological sciences.

**313 Histology: The Biology of the Tissues.** Fall term. Credit four hours. Prerequisite: a two-semester introductory biology sequence; a background in vertebrate anatomy and organic chemistry or biochemistry desirable. Lectures,

T Th 11:15. Laboratory, T Th 2–4:25. Mr. Wimsatt. A general course dealing with the biology of the tissues to provide the student with a basis for understanding the microscopic and fine structural organization of vertebrates and the methods of analytic morphology at the cell and tissue levels. The dynamic interrelations of structure, composition, and function in cells and tissues are stressed.

**316 Invertebrate Zoology.** Spring term. Credit four hours. Prerequisite: at least one year of biological science or permission of instructor. Two lectures and two laboratories per week. Lectures, W F 11:15. Laboratory, W F 2:00–4:25. Mr. Anderson and assistant.

Lectures on selected topics in the development, structure, function, and interrelations of invertebrate animals, with particular attention to phylogenetic aspects. Intensive laboratory work on representative invertebrates, utilizing living or fresh specimens wherever possible. Each student will be expected to do a significant amount of independent work, and a term paper may be required.

**410 General Animal Physiology: A Quantitative Approach, Lectures.** Spring term. Credit three hours. Prerequisite: one year of biology and physics; courses in chemistry, organic chemistry, and biochemistry desirable. Lectures, M W F 10:10. Mr. Howland.

The principles of animal physiology are developed through consideration of the functioning of cells, tissues, and organs. Specific topics discussed include respiration, metabolism, circulation, excretion, body mechanics, muscle contraction, nerve action, sensory reception, and central nervous system function. A quantitative, systems-theoretical approach is emphasized.

**410A General Animal Physiology: A Quantitative Approach, Laboratory.** Spring term. Credit two hours. Prerequisite: course 410 or equivalent must be taken concurrently. Lecture, W 2. Laboratory, T 8–11 or M T Th or F 1:25–4:25. Mr. Howland.

Students are introduced to basic techniques utilized in the study of the physiology of animal tissues. Experiments cover topics dealing with respiration, properties of muscle, circulation, activity of nerves, and osmotic phenomena.

**412 Special Histology: The Biology of the Organs.** Spring term. Credit four hours. Given in alternate years. Enrollment limited to 18 students. Prerequisite: 313, or consent of instructor. Lectures, W F 9:05. Laboratory, W F 2–4:25. Mr. Wimsatt.

A continuation of Biological Sciences 313. The microscopic and ultrastructural organization of the principal vertebrate organ systems are studied in relation to their development, functional interaction, and special physiological roles. Courses 313 and 412 together present the fundamental aspects of the microscopic and submicroscopic organization of the vertebrate body from a physiological perspective. The organization of the course involves student participation in lecture-seminars, and the prosecution of independent project work supplementary to the regular work of the laboratory. The latter enables students to gain practical experience with histological and histochemical preparative techniques.

**414 Mammalian Physiology.** Spring term. Credit six hours. Registration by permission. Prerequisite: a year of biological sciences. Courses in biochemistry, histology, and gross anatomy desirable. Lectures, M W F 8. Discussion, S 10:10. Laboratory, M or W 1:25–4:25. Messrs. Gasteiger, Hansel, Visek (in charge), and Bensadoun. A general course in mammalian physiology including circulation, respiration, digestion, metabolism, renal function, endocrinology, and the nervous system.

**419 Research in Animal Physiology and Anatomy.** Either term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material, written permission from the staff member who will

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supervise the work and assign the grade. Staff. Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**512 Comparative Physiology.** Spring term. Credit two hours. Prerequisite: 410 or 414 and biochemistry or the equivalent. Students are encouraged to enroll in 512A concurrently. T Th 9:05. Messrs. McFarland and Pough.

**512A Comparative Physiology Laboratory.** Spring term. Credit two hours. Limited to 10 students. Prerequisite: concurrent enrollment in 512 and consent of instructors. T Th 1:25-4:25. Includes independent study. Messrs. McFarland and Pough.

**Animal Embryology (Biological Sciences 386).**

**Comparative Physiology of Reproduction of Vertebrates (Poultry Science 425, College of Agriculture and Life Sciences).**

**Developmental Anatomy and Histology (Veterinary Anatomy 507, Veterinary College).**

**Elements of Physical Biology (Veterinary Medicine 920, Veterinary College).**

**Fundamentals of Endocrinology (Animal Science 427-428, College of Agriculture and Life Sciences).**

**General Photobiology (Biological Sciences 547).**

**Neuroanatomy (Veterinary Anatomy 505, Veterinary College).**

**Optics in Biology (Biological Sciences 405).**

**Insect Morphology and Histology (Entomology 322, College of Agriculture and Life Sciences).**

**Sensory Function (Biological Sciences 427, 427A).**

**Vertebrate Morphology (Veterinary Medicine 900, Veterinary College).**

**Vision (Biological Sciences 425).**

**Introductory Physical Biology (Veterinary Medicine 311, Veterinary College).**

**Introductory Animal Physiology (Veterinary Medicine 312, Veterinary College).**

## Neurobiology and Behavior

**[320 Neurobiology and Behavior.** Fall term. Credit three hours. Limited to juniors, seniors and graduate students. Prerequisite: Biological Sciences 101-102. Lectures, T Th 5 12:20. Messrs. Eisner (in charge), O'Brien, van Tienhoven, Emlen and Halpern. Not offered in 1972-73.]

**323 Physiological Psychology (Also Psychology 323).**

Fall term. Credit three hours. Prerequisite: Biological Sciences 101-102 or equivalent and introductory chemistry, Psychology 201 or a 300-level course in psychology. Lectures T Th 9:05. Mr. Halpern.

Selective examination of neural, endocrine, and biochemical functions related to emotion, memory, learning, perception, hunger, and thirst.

**323A Physiological Psychology Laboratory (Also Psychology 323A).** Fall term. Credit three hours. Prerequisite: Biological Sciences 320, Psychology 201, concurrent registration in 323, and consent of instructor. Discussion, M 7:30-9:00 p.m. Laboratory, T 1:25-5:00. Mr. Halpern. Experiments will be done on physiological aspects of conditioning in vertebrates and invertebrates, memory, interactions between hormones and behavior, and effects

of brain lesions on perceptual and alimentary behavior. A final original experiment will be planned and carried out.

**324 Animal Social Behavior.** Spring term. Credit four hours. Limited to 20 undergraduates. Prerequisite: Biological Sciences 101-102. Not open to students who have already taken course 523. M F 11:15-1:10.

**325 Fine Structure of the Nervous System.** Fall term. Credit three hours. Prerequisite: Biological Sciences 101-102 and 320; the latter may be waived by permission of the instructor. Lectures, T Th 11:15. Mr. Salpeter. A course on the cellular organization of the nervous system. Special emphasis on development, functional relationships, and ultrastructure.

**326 Elementary Neurophysiology.** Spring term. Credit 3 hours. Prerequisite: Biological Sciences 325 or permission of the instructor. Lectures, T Th 9:05. Discussion section to be arranged. Mr. Podleski. Lectures will examine in detail the biophysical and biochemical properties of the excitable membranes of nerve cells and muscle. Emphasis will be placed on the quantitative analysis and the possible molecular mechanisms underlying these properties. Among the topics to be studied are the following: the origin of bioelectric potentials, excitability, synaptic transmission, neural circuits, the specificity of neural membranes and possible mechanisms for plasticity.

**328 Behavioral Maturation (Also Psychology 328).** Spring term. Credit three hours. Prerequisite: familiarity with psychological theories of learning and development and one year of college biology. W F 12:20. Mr. Lenneberg. Emergence of behavior will be studied in the light of developmental biology, including behavior genetics, neuroembryology and morphogenesis, physical maturation of the brain, transformation and allometry as well as retarding influences from the environment.

**421 Comparative Vertebrate Ethology.** Fall term. Credit three hours. Prerequisite: 101-102 and 320, and permission of the instructor. Lectures, T Th 9:05. Laboratory, to be arranged. Mr. Dilger. A survey of the methods and principles of vertebrate ethology for students specializing in this field or for those in other branches of zoology wishing to broaden their knowledge of animal behavior. Emphasis is placed on the causation, function, biological significance, and evolution-of-species typical behavior. The laboratories are designed to give first-hand knowledge of the material covered in lectures.

**423 Animal Communication.** Fall term. Credit four hours. Enrollment limited to 32 students. Prerequisite: Biological Sciences 320 and Physics 207-208. Lectures, T Th 10:10. Laboratory, T or Th 1:25-4:25. Mr. Capranica.

The course will emphasize the functional aspects of biological signals, their physical properties, and the physiological mechanisms underlying their generation and reception. Lectures will examine in detail selected biological communication problems from each of the known sensory modalities. Discussion will cover signal analysis, transmission properties, and the limitation of each type of communication. Laboratories will include behavioral observations under both field and captive conditions, and individual experience with the techniques of signal recording and analysis.

**424 Brain and Behavior (Also Psychology 424).** Spring term. Credit three hours. Prerequisite: familiarity with theories of perception, memory, and physiological psychology, or permission of the instructor. M 1:25-4:00. Mr. Lenneberg.

A theoretical introduction to human neurology for psychologists. This survey of clinical symptoms and their etiology is designed to enable students to make use of disease for research purposes.

**425 Vision.** Fall term. Credit two hours. Prerequisite: Chemistry 104 or 108, Math 108 or 111, Physics 102 and 208, or consent of the instructor. Concurrent or previous enrollment in Biological Sciences 405 recommended. Lectures T Th 10:10. Mr. Clayton. Not given in 1972-73.]

**426 Neuropharmacology.** Spring term. Credit three hours. Prerequisites: Biological Sciences 431 and 320, or consent of instructor. Lectures, M W F 8. Mr. Eldefrawi. The course deals with drugs that affect the nervous system, both central and peripheral. Emphasis will be on mechanisms of drug action whereby basic biochemical processes and neurophysiological and behavioral phenomena are bridged. Drugs discussed will range from cholinergic ones to depressants, stimulants, local anesthetics, and hallucinogens. Topics covered will also include drug addiction, use of drugs to uncover physiological mechanisms and the biochemical basis of the therapeutic uses of drugs in diseases of the nervous system.

**427 Sensory Function (Lectures) (Also Psychology 427).** Fall term. Credit three hours. Prerequisite: Biological Sciences 320 or the equivalent. Lectures, M W F 11:15. Discussion period to be arranged. Messrs. Tapper and Halpern. Given in alternate years. Not offered in 1972-73.]

**427A Sensory Function (Laboratory) (Also Psychology 427A).** Fall term. Credit two hours. Enrollment limited to 15 students, and only by permission of the instructors. Prerequisite: Biological Sciences 427. Hours to be arranged. Organizational meeting 4:30 on the first Monday of the term. Messrs. Tapper and Halpern. Given in alternate years. Not offered in 1972-73.]

**428 Neurochemistry.** Spring term. Credit three hours. Prerequisite: Biological Sciences 431 and Biological Sciences 326, 427, or 524, or their equivalent; Biological Sciences 433 is also desirable. Lecture, T Th 11:15; Discussion, T Th 12:20. Mr. Grossfeld. Special features of the composition and metabolism of neural tissue will be discussed. The identification of synaptic transmitters in the nervous system, including their specific localization, biosynthesis and metabolism, release, inactivation, and action on postsynaptic receptors will be considered in detail. Chemical aspects of vision and of neuronal development and maturation will also be studied. (Approximately 50-100 students)

**429 Research in Neurobiology and Behavior.** Either term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material, written permission from the staff member who will supervise the work and assign the grade. Staff. Practice in planning, conducting, and reporting independent laboratory and/or library research programs. For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**522 Brain Mechanisms and Models.** Spring term. Credit four hours a term. Not offered in 1972-73.]

**523 Ecological Aspects of Animal Behavior.** Fall term. Credit four hours. Prerequisite: course work in animal behavior and ecology and permission of instructor. Enrollment will be limited. Lectures, T Th 11:15. Discussions, T Th 12:20. Messrs. Emlen and Ambrose.

**524 Behavioral Neurophysiology.** Spring term. Prerequisite 320 or equivalent. One two-hour small discussion group weekly, time to be arranged. One lecture weekly at either T Th or S 9:05. Mr. Camhi. Enrollment limited to 25 students.

**524A Behavioral Neurophysiological Laboratory.** Spring term. Credit two hours. Enrollment limited to 15 students. Biological Sciences 524 must be taken concurrently. Time to be announced. Mr. Camhi.

**525 Functional Organization of the Mammalian Nervous System.** Fall term. Credit six hours. Given in alternate years. Prerequisite: two years of biological science. Courses in biochemistry, physics, and neural anatomy are desirable. Lectures, M W F 10:10. Laboratory, W 1:25. Mr. Gasteiger.

**526 Bioelectric Systems.** Spring term. Credit three hours. Prerequisite: Biological Sciences 423 or 427 or 524, or Physics 360, or Electrical Engineering 4401, and permission of instructor. Lectures, M W 9:05. Discussion and demonstrations, Th 2. Messrs. Capranica and Kim.

**620 Seminar in Neurobiology and Behavior.** Either term. Credit one hour. Time to be arranged. Organizational meeting, first Monday of semester, 8 p.m. Comstock 245. Staff. Fall topic, animal behavior; spring topic, neurobiology.

**622 Seminar in Ecological Animal Behavior.** Spring term. Credit one hour. Open to qualified graduate and undergraduate students who have taken courses in animal behavior and ecology, and who have secured permission of the instructor. Time to be arranged. Limited to twelve students. Mr. Ambrose.

**629 Advanced Topics in Neurobiology and Behavior.** Either term. A seminar course for graduate students and selected undergraduates. Topics, credit, and hours to be arranged. Staff and students.

**Optics in Biology (Biological Sciences 405).**

## Biochemistry

**130 Orientation Lectures in Biochemistry.** Spring term. Noncredit. For freshman and sophomore students. Eight lectures or discussion sessions given in February and March covering interesting areas of biochemistry. W 7:30 p.m. Mr. Racker and staff.

**131 Introductory General Biochemistry.** Fall term. Credit six hours. A terminal course primarily for nonscience undergraduates. Lectures, M T W Th 11:15. Recitation, Th 2-4:25. Mr. Neal. Lectures, demonstrations, and recitations dealing with selected fundamental principles of general, organic and biochemistry with emphasis on biochemistry.

**231 Introductory Biochemistry.** Fall term. Credit three hours. Prerequisite: Chemistry 104 or 108, or the equivalent. May not be taken for credit by students who have completed a more advanced course in this section. Lectures, T Th F 12:20. Mr. Williams. A brief survey of organic chemistry as related to biological compounds and a discussion of selected biochemical topics and reactions associated with the metabolism of animals, plants, and microorganisms. Especially designed as a general course for four-year students in agriculture.

**431 Principles of Biochemistry, Lectures.** Either term. Credit four hours a term. Prerequisite: Organic Chemistry 353-355 or the equivalent. Fall term lectures, M T Th S 8. Miss Daniel. Spring term lectures, M W F S 10:10. Mr. Edelstein.

A basic course dealing with the chemistry of biological substances and their transformations in living organisms.

**433 Principles of Biochemistry, Laboratory.** Fall term. Credit three hours. Prerequisite: Biological Sciences 431 (may be taken concurrently) and permission of the instructor. Laboratory, M W 2-4:25. Discussion period, M 1:25. Mr. Neal.

Laboratory practice with biochemical substances and experiments designed to illustrate basic biochemical principles and techniques. This laboratory is designed primarily for students who have not had previous biochemical laboratory training.

**434 Principles of Biochemistry, Laboratory.** Spring term. Credit four hours. Primarily for advanced undergraduates

intending to enter graduate school and for graduate students. Prerequisite: Biological Sciences 431, and permission of instructor. Laboratory, T W or Th 9:05–4:25. Lecture, M 1:25. Mrs. Fessenden-Raden. Laboratory practice with biochemical substances and experiments designed to introduce the student to techniques used in biochemical research, such as enzyme purification and characterization, kinetic analyses, use of radioisotopes, and chromatography.

**435–436 Undergraduate Biochemistry Seminars.** 435 Fall term only; 436 Spring term only. Credit one hour each term. Juniors and seniors only. Enrollment limited. Prerequisite: 431 or consent of instructor. A group of selected papers from the literature will be critically evaluated during six or seven two-hour meetings. A term paper will probably be required. Fall term: Bioenergetics. First meeting, first T 4:00. Mr. Hinkle. Spring term: Biochemistry and Metabolism of Amino Acids. First meeting, first T 4:00. Mr. Williams.

**439 Research in Biochemistry.** Either term. Credit hours to be arranged. For undergraduate students concentrating in biochemistry. Prerequisite: adequate ability and training for the work proposed. Undergraduates must attach to their preregistration material, written permission from the staff member who will supervise the work and assign the grade. Mr. Gaylor. Special work in any branch of biochemistry on problems under investigation by the staff of the section.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**[530 Biochemistry of the Vitamins.** Spring term. Credit two hours. Given in alternate years. Prerequisite: Chemistry 353–355 and Biological Sciences 431 or their equivalent. Lecture: T Th 10:10. Miss Daniel. Not offered in 1972–73.]

**531–532 Intermediate Biochemistry (Lectures).** 531 Fall term only; 532 Spring term only. Credit four hours a term. Prerequisite: Chemistry 358, Biological Sciences 431 or consent of the instructor. Physical chemistry highly desirable. Lectures, M W F S 9:05. Fall term: Mr. Moffat. Spring term: Mr. Wilson and Mr. Hinkle.

**533 Intermediate Biochemistry (Laboratory).** Fall term. Credit four hours. Prerequisite: Chemistry 287–288 or 389–390. Must be taken with or following Biological Sciences 531. Laboratory, T or Th 9:05–4:25. One discussion period to be arranged. First meeting for both sections will be held on the first Tuesday at 9:05. Mr. Wharton.

**536 Advanced Biochemical Methods (Laboratory).** Spring term. Credit two hours. Graduate majors in biochemistry only. Prerequisite: Biological Sciences 533. Hours to be arranged. Mr. Wu.

**631–632 Research Seminar in Biochemistry.** 631 Fall term only; 632 Spring term only. Credit one hour per term. S-U grades only. May be repeated for credit. Required of all graduate students (except first-year students) majoring in biochemistry. M 8–9:30 p.m. Mr. Racker.

**633–638 Advanced Biochemistry.** Lectures and seminars on specialized topics, three topics per term. May be repeated for credit. The following fields will be covered. (Each field is divided into three related topics.): Enzyme Structure and Mechanism of Action (Fall 1972, 1974); Aspects of Protein and Nucleic Acid Synthesis (Spring 1973, 1975); Structure, Function, and Synthesis of Biological Membranes (Fall 1973, 1975); Aspects of Metabolic Pathways and Their Control (Spring, 1974, 1976). The topics for the academic year 1972–73 are as follows:

#### *Enzyme Structure and Mechanism of Action*

**633 Aspects of Hemoglobin Structure and Function.**

**635 (Topic to be announced.)**

**637 Control Mechanisms in Protein Biosynthesis.**

#### *Aspects of Protein and Nucleic Acid Synthesis*

**634 Molecular Regulation of Enzyme Activity.**

**636 Regulation of Intermediary Metabolism.**

**638 Nucleic Acids.**

## Botany

**242 Plant Physiology.** Spring term. Credit five hours. Primarily for undergraduates in the agricultural sciences. Prerequisite: Biological Sciences 101–102 and introductory chemistry. Lectures, T Th S 10:10. Conference, M T W or Th 12:20–1:10. Room to be arranged. Laboratory, M T W or Th 1:25–4:25. Conference and laboratory must be on same day. The laboratory is the same as for course 340. Messrs. Davies and Spanswick.

Plant physiology as applied to plants growing in communities. Examples will deal with crop plants or higher plants where possible, though not exclusively. Topics will include cell structure and function; soil-plant-water relations; water uptake, transport and transpiration; irrigation of crops; sugar transport; mineral nutrition of crops; respiration and photosynthesis; light relations in crops; growth and development-hormones, flowering, fruiting, dormancy, and abscission; chemical control of plant growth.

**340 Plant Physiology.** Spring term. Credit three hours. Prerequisite: Biological Sciences 101–102 and organic chemistry. Must be accompanied by Biological Sciences 342 except by permission of the instructor. Lectures, T Th S 10:10. Mr. Jagendorf.

The behavior, growth, transport processes, and environmental response of plants. Topics will include membrane properties, solute and water transport, function of osmotic forces; mineral and organic nutrition; stress resistance; growth and hormonal action; metabolism including photosynthesis and respiration; responses to gravity, light, photoperiod, and temperature.

**342 Plant Physiology Laboratory.** Spring term. Credit two hours. Must be accompanied by Biological Sciences 340. Conference and laboratory must be on the same day. Conference M T W or Th 12:20–1:10. Room to be arranged. Laboratory, M T W or Th 1:25–4:25. Messrs. Jagendorf and Spanswick.

**344 Phycology.** Spring term. Credit four hours. Lectures, M W F 10:10. Laboratory, M or F 2–4:25. Mr. Kingsbury. An introduction to freshwater and marine algae including consideration of their ecology as members of the plankton and benthos and their importance to man. The laboratory, utilizing field material and cultures from an extensive living collection, is designed to illustrate lecture topics, provide familiarity with algae in the field, and introduce the student to techniques used in isolating, culturing, and studying algae in the laboratory.

**345 Plant Anatomy.** Fall term. Credit four hours. Prerequisite: Biological Sciences 101–102 and preregistration with instructor in charge. Lectures, T Th 8. Warren 145. Laboratory, T Th 10:10–12:35 or M W 2–4:25. Mr. Paolillo.

**347 Cytology.** Fall term. Credit four hours. Prerequisite: Biological Sciences 101–102 or the equivalent; 281 recommended. Lectures, M W 9:05. Laboratory, M W or T Th 10:12:35. Mr. Uhl.

A study primarily of the structure of cells and their components and the relation of these to function and to heredity. Special attention is given to chromosomes. Both plant and animal materials are used.



**347A Cytology, Lectures.** Fall term. Credit two hours. Lecture part only of Biological Sciences 347. Mr. Uhl.

**347B Cytology, Laboratory.** Fall term. Credit two hours. Prerequisite: 347A. Laboratory part of Biological Sciences 347.

**349 Plants and Man.** Spring term. Credit three hours. Lectures and discussions, M W F 8. Mr. Bates. A consideration of the role of plants in the human environment and in the evolution of civilizations. Intended for students in all colleges. Emphasis is on ethnobotanical considerations and on historical to present day utilization of plants in nutrition, housing, clothing, medicine, religion, and the arts.

**440 Cytogenetics.** Spring term. Credit three hours. Given in alternate years. Prerequisite: Biological Sciences 347 and 281 or the equivalent. Lectures, M W 9:05. Laboratory, M or W 10:10–12:35. Mr. Uhl.

An advanced course dealing mainly with the cellular mechanisms of heredity and including recent researches in cytology, cytogenetics, and cytotoxonomy.

**[441 Plant Growth and Development.** Fall term. Credit three hours. Prerequisite: Biological Sciences 242 or 340, and 345, or equivalent, or permission of instructor. Lectures, M W F 8. Messrs. Paolillo and Davies. Given in alternate years. Not given in 1972–73.]

**444 Comparative and Developmental Morphology of the Embryophyta.** Spring term. Credit four hours. Given in alternate years. Prerequisite: Biological Sciences 345 and consent of the instructor. Lectures, T Th 8. Laboratory, T Th 2–4:25. Mr. Paolillo.

The life histories of bryophytes, vascular cryptogams, and seed plants are explored for their developmental attributes and for their bearing on concepts of evolution and group relationships. The course content is presented so that an awareness of the integration between morphology and other disciplines in biology can be developed.

**[448 Paleobotany.** Spring term. Description to be announced. Time to be arranged. Mr. Banks. Not given in 1972–73.]

**449 Research in Botany.** Either term. Credit and hours to be arranged. Undergraduates must attach to their pre-registration material, written permission from the staff member who will supervise the work and assign the grade. Staff.

Students engaged in special problems or making special studies may register in this course. They must satisfy the instructor under whom the work is taken that their preparation warrants their choice of problem.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**543 Plant Physiology, Advanced Laboratory Techniques.** Fall term. Credit four hours. Primarily for graduate students doing work in plant physiology, but open to others if space permits. Prerequisite, organic chemistry, biochemistry, Biological Sciences 242 or 340, or the equivalent. Pre-registration recommended. Laboratory, T or W 8–5. Recitation, M 4:30–5:30. Staff.

**545 Photosynthesis.** Fall term. Credit two hours. Prerequisite: Chemistry 104 or 108, Math 108 or 111, and Physics 102 or 208, or consent of the instructor. Concurrent or previous enrollment in Biological Sciences 405 recommended. Lectures, T Th 10:10. Mr. Clayton.

**[547 General Photobiology.** Fall term. Credit two hours. Open to undergraduate students. Prerequisite: same as for Biological Sciences 545. Concurrent or previous enrollment in Biological Sciences 405 recommended. Lectures, T Th 10:10. Mr. Clayton. Not offered in 1972–73.]

**[548 Plant Physiology: Aspects of Metabolism.** Spring term. Credit three hours. Given in alternate years. Prerequisite: Biological Sciences 242 or 340, and 431; Chemistry 353, or the equivalent. Lectures, M W F 9:05. Messrs. Jagendorf, Thompson, McCarty, and staff. Not offered in 1972–73.]

**549 Plant Physiology: Transport of Solutes and Water.** Fall term. Credit three hours. Given in alternate years. Prerequisite: Biological Sciences 340, or equivalent. Lectures, M W F 10:10. Messrs. Miller and Spanswick.

**643 Plant Physiology Seminar.** Either term. Non-credit. Required of graduate students taking work in plant physiology. F 11:15. Staff.

**645 Current Topics in Plant Physiology.** Either term. Credit two hours per term. Course may be repeated for credit. Time to be arranged. Staff.

**647 Special Topics in Plant Toxonomy.** Either term. Credit one hour per term. Prerequisite: permission to register. Lecture and discussion. Hours to be arranged. Messrs. Moore, Dress, Bates, and Ingram.

**Evolution, Taxonomy, and Ecology of Vascular Plants (Biological Sciences 371, 464, 663).**

**Plant Ecology (Biological Sciences 463).**

**Advanced Mycology (Plant Pathology 569, 579, 589, College of Agriculture and Life Sciences).**

**Current Topics in Mycology (Plant Pathology 649, College of Agriculture and Life Sciences).**

**Comparative Morphology of Fungi (Plant Pathology 309, College of Agriculture).**

**Optics in Biology (Biological Sciences 405).**

## Ecology, Evolution, and Systematics

**261 Introductory Ecology.** Fall term. Credit two hours. Prerequisite: one year of college biology or a score of 5 on the advanced placement examination. Lecture T Th 11:15. Messrs. Brussard and Marks.

A course designed for students who want a basic grounding in the principles of ecology as a fundamental science. (Students concentrating in Ecology and Evolutionary Biology must take Biological Sciences 361 instead of this course). Topics covered will include the growth and limitation of populations, interactions between populations, the structure of communities, and the flow of energy and cycling of materials in ecosystems. The ecological effects of human overpopulation and its attendant problems will also be discussed.

**273 The Vertebrates.** Fall term. Credit five hours. Laboratory enrollment limited to 20 per section. Prerequisite: Biological Sciences 101–102 or equivalent. Lectures, T Th 10:10. Laboratory, M W 1:25–5; T Th 1:25–5; M 7–10 p.m., F 1:25–5; T Th 7–10 p.m. Messrs. McFarland and Pough. An introduction to the evolution, classification, comparative anatomy, life history, and behavior of vertebrate animals. Laboratory dissection, experimentation, and demonstration are concerned with structure, classification, systematics, biology of species, and studies of selected aspects of vertebrate life. Midterm examination will be given in the evening. Time to be announced.

**361 General Ecology.** Either term. Credit three hours. Not open to freshmen. Prerequisite: Biological Sciences 101–102 or the equivalent. Lectures, T Th 9:05. Discussion, W or Th 1:25, 2:30, or 3:35. Messrs. Root and Marks. Principles concerning the interactions between organisms and their environment. Influence of competition, social behavior, predation, and other factors of population size and dispersion. Role of energy flow and mineral cycling in determining the structure and productivity of ecosystems.

Succession and classification of natural communities. Influence of climate and past events on the diversity and stability of communities in different regions of the world. Interspecific competition and the niche concept. Chemical interactions between organisms. Application of ecological principles to human problems. Modern evolutionary theory will be stressed throughout and attention given to conflicting ecological hypotheses.

**364 Introduction to Marine Science.** Summer. Credit four hours. S-U grades only. Prerequisite: a full year of college biology. A special course offered at the Cornell Marine Laboratory, Isles of Shoals, off Portsmouth, New Hampshire, summer 1973. The faculty includes approximately fifty lecturers from academic institutions, marine industry, governmental agencies, and fishermen. Mr. Kingsbury. Living material and habitats are emphasized in introducing students to the major disciplines of oceanography and in rounding out the student's knowledge of these topics as presented at inland locations. Shipboard demonstrations are conducted of oceanographic tools and techniques, and the North Atlantic fisheries are examined with the participation of commercial trawlers and fishermen from the Gloucester fleet and the National Marine Fisheries Service. This course is presented cooperatively by Cornell University, the University of New Hampshire, and the State University of New York, and carries transcript credit at the participating universities. For more details see the *Announcement of the Summer Session*, or consult the Marine Biology Office, 202 Plant Science Building.

**371 Taxonomy of Vascular Plants.** Fall term. Credit four hours. Prerequisite: Biological Sciences 281 or permission to register. Lectures and discussions, T Th 9:05. Laboratory, T Th 2-4:25. Mr. Clausen.

An introduction to the evolution and classification of vascular plants, with attention to principles, methods of identification, and literature. In the first part of the term, trips are held in laboratory periods.

**461 Oceanography.** Fall term. Credit three hours. Prerequisite: Biological Sciences 361 or consent of the instructor. Lectures, T Th 10:10. Additional lectures, Th 12:20 alternating with laboratory, M T or Th 2-4:30. Mr. Barlow.

Physical and chemical aspects of the marine environment, and interactions with marine communities. Laboratories devoted to demonstrations of field and laboratory techniques, experiments with simple models, and interpretation and analysis of typical oceanographic data.

**[462 Limnology, Lectures.]** Spring term. Credit three hours. Prerequisite: Biological Sciences 361, 261 or permission of instructor. Lecture, M W F 11:15. Mr. Likens. Not given in 1972-73.]

**[462A Limnology, Laboratory.]** Spring term. Credit two hours. Prerequisite: concurrent enrollment in 462. Laboratory, F 1:25-5:25 or S 8-12. Laboratories devoted to both field studies and experiments on model ecosystems. There will be one all-day field trip. Mr. Likens. Not given in 1972-73.]

**463 Plant Ecology.** Fall term. Credit four hours. Prerequisite: two advanced-level courses in biology or consent of instructor. Lectures, M W F 11:15. Laboratory and field trips, T or F 2-5. Mr. Miller. Principles of plant-environment interactions in relation to the distribution, structure, and functioning of plant communities. These principles will be illustrated by analysis in the field of representative plant communities and their environments, and by conducting experiments in the laboratory with plants grown under controlled environmental conditions.

**464 Evolution and Ecology of Vascular Plants.** Spring term. Credit four hours. Prerequisite: Biological Sciences

371 or permission to register. Lectures and discussions, T Th 9:05. Laboratory, T Th 2-4:25. Mr. Clausen. A study of the variation, evolution, and ecological distribution of vascular plants. Laboratory periods in the later part of the term are devoted to study of natural populations in the field.

**466 Chemical Ecology (Also Chemistry 470).** Spring term. Credit two hours. Primarily for seniors and graduate students. Given in alternate years. Prerequisite: Chemistry 353 or 357-358, Biological Sciences 101-102 or permission of instructor. Lectures, M F 12:20. Messrs. Alexander, Eisner, and Whittaker; Mrs. Feeny. Ecological and evolutionary significance of chemical interactions of organisms. Summary of key processes in regulation of natural populations. Survey of major classes of natural products with emphasis on appropriate analytical techniques. Chemical adaptations for reproduction, defense, habitat selection, dispersal, feeding efficiency and competition in animals, plants, and microorganisms. Choice of adaptive strategy in relation to energy flow. Practical applications of chemical ecology.

**467 Species Distribution and Abundance.** Fall term. Credit three hours. Prerequisites: Biological Sciences 361; introductory statistics strongly recommended. Lecture, T Th 1:25-2:20. Laboratory, Th 2:35-4:30. Mr. Brussard. An advanced course emphasizing the unifying principles of ecology, biogeography, and population biology. Topics include the distribution of organisms in time and space, biogeographic regions, continental and island patterns of distribution, ecology of dispersal and colonization, ecological and genetic considerations of population structure, and factors determining population size. Includes projects and exercises designed to give students first hand contact with field techniques and data analysis.

**468 Biology of Fishes.** Spring term. Credit two hours. Prerequisite: introductory biology, or 273, or the equivalent. Lectures, M W 9:05. An introduction to the study of fishes; their structure, classification, evolution, distribution, ecology, physiology, and behavior. Laboratory studies on structure, identification, classification, and nomenclature. Field studies of local species.

**470 Ichthyology.** Spring term. Credit two hours. Prerequisite: Biological Sciences 468 or consent of the instructor. Lectures, M W 9:05. Given in alternate years. Lectures on advanced aspects of the biology of fishes including systematics, ecology, life history, and literature. Laboratory studies of the orders, major families, and principal genera, and of systematic procedures. Field studies of the ecology and life history of local species.

**471 Mammalogy, Lectures.** Spring term. Credit three hours. Prerequisite: 101-102; Lectures, T Th S 10:10. Messrs. Hudson and Richmond. Lectures on the evolution, classification, distribution and adaptations, both physiological and morphological, of mammals.

**471A Mammalogy, Laboratory.** Spring term. Credit two hours. Prerequisite: concurrent enrollment in Biological Sciences 471. Laboratory, T Th or W F 1:25-4:25. Mr. Hudson.

Laboratory and field work on ecology, behavior, physiology, and the taxonomy of recent mammals, with emphasis on the North American fauna.

**472 Ornithology.** Spring term. Credit four hours. Prerequisite: Biological Sciences 273 or equivalent work in vertebrate biology and permission of instructor. Lectures, T Th 11:15. Laboratory, W 2-4:30 and S 8-11. Mr. Cade or Mr. Lancaster.

Lectures cover various aspects of the biology of birds, including anatomy, physiology, classification, evolution, migration and orientation, behavior, ecology, and distribution. Laboratory will include studies of external and

internal morphology, pterylosis, molts and plumages, skin identification of birds of New York, and families of birds of the world. Several demonstration periods will emphasize hybridization, evolution, adaptive radiation, mimicry, and geographic variation. Field work includes identification of birds and familiarization of some techniques used in field research.

**474 Herpetology.** Spring term. Credit four hours. Prerequisite: Biological Sciences 273 or equivalent experience in vertebrate zoology with permission of the instructor. Lectures, T Th 10:10. Laboratory, T Th 1:25–4:25 (plus irregular hours as required for experiments and some required evening and Saturday field trips). Mr. Pough. Lectures on the evolution, distribution, and adaptations of reptiles and amphibians. Emphasis on ecology, behavior, and physiology. Laboratory and field work on systematics, ecology, behavior, and physiology.

**474A Herpetology Lectures.** Spring term. Credit two hours. Graduate students only, permission of instructor required. Mr. Pough.

**475 Organic Evolution.** Fall term. Credit four hours. Prerequisites: Biological Sciences 281 and a working knowledge of elementary algebra and logarithms. Also desirable is a course with some taxonomic content in botany or zoology, or else some experience in making and maintaining a collection of some plant or animal group. Lectures, T Th 11:15, lecture or discussion, Th 12:20 and optional discussion one evening session each week, to be arranged. Mr. W. L. Brown. Lectures and class discussions on organic evolution, with primary emphasis on the mechanisms of animal speciation, and adaptation. The course begins with a few lectures on taxonomic methodology.

**479 Research in Ecology, Evolution, and Systematics.** Either term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material, written permission from the Chairman, and faculty of Ecology and Systematics who will supervise the work and assign the grade. Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**561 Quantitative Ecology.** Fall term. Credit four hours. Prerequisite: one year of biology and permission of instructor. Organic chemistry and some college mathematics are desirable. Lectures, T Th S 11:15. Laboratory, W 1:25–4:25. Mr. Cole.

**562 Ecology of Pest Management.** Spring term. Credit three hours. Prerequisite: Biological Sciences 101 and 102 or the equivalent. Lectures, T Th 11:15. Special problem required. Mr. Pimentel and staff.

**564 Advanced Plant Ecology.** Spring term. Credit two or four hours. Prerequisite: Biological Sciences 463. One course each in plant physiology and soils is strongly recommended. Meetings, M W F 11:15. Messrs. Whittaker and Miller.

**565 Special Topics in Limnology.** Fall term. Credit one hour. Primarily for graduate students. Prerequisite: consent of instructor. Hours to be arranged. Mr. Likens.

**566 Marine Ecology.** Spring term. Credit three hours. Given in alternate years. Enrollment limited. Prerequisite: Biological Sciences 361, 461. Lectures, M W 9:05. Additional lecture, F 9:05 alternating with laboratory. Laboratory time to be arranged. The laboratory may also include independent study of special topics. Mr. Barlow.

**566A Marine Ecology, Field Work.** Spring term. Credit one hour. Concurrent enrollment in Biological Sciences 566 and consent of instructor required. Enrollment limited. Times to be arranged. Mr. Barlow.

**[571 Special Topics in Higher Vertebrates.** Fall term. Credit two hours. Enrollment limited. Prerequisite: advanced courses in vertebrate biology and permission of instructors. Hours to be arranged. Messrs. Cade and Hudson. Not offered in 1972–73.]

**573 Special Topics in Lower Vertebrates.** Fall term, even-numbered years only. Credit two hours. Enrollment limited. Prerequisite: consent of instructor. For advanced students in biological sciences. Hours and topics to be arranged. Messrs. McFarland and Pough.

**661 Seminar in Population and Community Ecology.** Fall term. Credit one hour. Course restricted to graduate students. Prerequisite: permission of instructor. Lecture, M 7:30 p.m. This course may be repeated for credit. Messrs. Root, Brussard, and Levin.

**663 Seminar in Evolution and Ecology of Vascular Plants.** Fall term. Credit one hour. Prerequisite: Biological Sciences 464 and Statistics 510 and 511 or equivalent, or permission of instructor. Lecture and discussion, M 11:15. Mr. Clausen.

**[665 Environmental Physiology.** Fall term. Credit three hours. Lectures, M W 9:05–10:35. Messrs. McFarland and Miller. Not given in 1972–73.]

**[666 Population Ecology.** Spring term. Credit three hours. Prerequisite: graduate standing with some background in calculus, statistics, ecology, and evolutionary theory plus consent of instructor. Lectures and discussions, M W 9:05–10:35. Messrs. Cole and Brussard. Not given in 1972–73.]

**667 Community Ecology.** Fall term. Credit three hours. Prerequisite: Biological Sciences 666 or permission of instructor. Lectures, M W 9:05–10:35. Messrs. Whittaker, Barlow, and Marks.

**668 Ecosystems.** Spring term. Credit three hours. Prerequisite: Biological Sciences 667 or permission of instructor. Lectures, M W 9:05–10:35. Messrs. Whittaker and Likens.

**669 Current Topics in Plant Ecology.** Either term. Credit two hours. May be repeated for credit. Hours to be arranged. Mr. Miller.

**Insect Biology (Entomology 212, College of Agriculture and Life Sciences).**

**Invertebrate Zoology (Biological Sciences 316).**

**Advanced Soil Microbiology (Agronomy 506, College of Agriculture and Life Sciences).**

**Soil Microbiology Lectures (Agronomy 306, College of Agriculture and Life Sciences).**

**Soil Microbiology Laboratory (Agronomy 307, College of Agriculture and Life Sciences).**

**Microbial Ecology (Biological Sciences 492).**

**Aquatic Plants (Agronomy 431, College of Agriculture and Life Sciences).**

**Phycology (Biological Sciences 344).**

**Aquatic Entomology and Limnology (Entomology 471, College of Agriculture and Life Sciences).**

**Introductory Insect Taxonomy (Entomology 331, College of Agriculture and Life Sciences).**

**Advanced Insect Taxonomy (Entomology 531, 532, 533, 534, College of Agriculture and Life Sciences).**

**Introductory Parasitology (Entomology 351, College of Agriculture and Life Sciences).**

**Advanced Parasitology (Entomology 551, College of Agriculture and Life Sciences).**

**Ecological Aspects of Animal Behavior (Biological Sciences 523).**

## Genetics and Development

**280 Human Genetics.** Spring term. Credit three hours. Prerequisite: Biological Sciences 101–102 or equivalent. Students who have had Biological Sciences 281 may register only with the permission of the instructor. Lectures, M W 10:10. Discussion, Th one section 10:10 or two sections 11:15 or F four sections 10:10 or one section 11:15. Limit of 25 each section. Mr. Srb. An introduction to biological heredity through consideration of the genetics of man. Advances in the science of genetics are having a profound effect on man's understanding of himself and on his potential for influencing his present and future well-being. The course is intended primarily to contribute to the student's general education in these matters and, although certain aspects of genetics will be considered with some rigor, the course is not designed to serve as a prerequisite to advanced courses in genetics.

**281A Genetics, Lectures.** Either term. Credit three hours. Prerequisites: Biological Sciences 101–102 or 105 or equivalent. Students who have had Biological Sciences 280 may register only with the permission of the instructor. Lecture must be taken concurrently with 281B, Genetics Laboratory. Lectures, M W F 8. (Preliminary examinations may be scheduled in the evening.) Mr. Bruns (fall) and Mr. Fink (spring.)

A general study of the fundamental principles of genetics in eucaryotes, procaryotes, and viruses. Discussions of gene transmission, gene action and interaction, gene linkage and recombination, gene structure, gene and chromosome mutations, genetic aspects of differentiation, genes in populations, breeding systems, extrachromosomal inheritance.

**281B Genetics, Laboratory.** Either term. Credit two hours. Must be taken concurrently with 281A. Laboratory, M T W Th or F 2:30–4:25, or T Th 8–9:55 or S 10:10–12:05. Mr. MacIntyre and assistants.

A laboratory course in genetics emphasizing the principles of inheritance. Students perform experiments with microorganisms and conduct an independent study of inheritance in *Drosophila*. Students do not preregister for laboratory sections. Laboratory assignments will be made at the end of the first lecture period of 281A.

**386 Animal Embryology.** Spring term. Credit four hours. Prerequisite: Biological Sciences 281. Lectures, M W F 9:05. Laboratory, W and F 10:10–12:35 or 2–4:25. Mr. Wimsatt.

**387 Molecular Aspects of Development.** Fall term. Credit three hours. Prerequisite: Biological Sciences 281. Biological Sciences 431 highly recommended. Lectures, M W F 9:05. Mr. Hallberg. Analysis at the cellular and subcellular level of the regulation of the synthesis and activity of gene products in the development of eucaryotes. Selected systems will be discussed which demonstrate the differential regulation of nucleic acid and protein synthesis within individual cells as well as between different populations of cells within a developing organism. Consideration will also be given to the development of cell organelle systems.

**480 Population Genetics.** Spring term. Credit three hours. Given in alternate years. Prerequisite: Biological Sciences 281 or the equivalent. Lectures, T Th 11:15. Mr. Wallace. A study of factors which influence the genetic structure of Mendelian populations and which are involved in race formation and speciation. In contrast with course 484,

course 480 deals largely with the algebraic aspects of population genetics.

**[484 Molecular Evolution.** Spring term. Credit three hours. Given in alternate years. Prerequisites: Biological Sciences 281 and organic chemistry. Lectures, T Th 11:15. Mr. MacIntyre. Not given in 1972–73.]

**488 Genetics of Lower Eucaryotes.** Spring term. Credit three hours. Prerequisites: Biological Sciences 281 and a course in organic chemistry. Lectures, M W 9:05. Messrs. Srb, Fink, and Bruns. Genetic aspects of the biology of a few eucaryotic microorganisms, primarily yeast, *Neurospora*, and ciliated protozoa, with emphasis on the use of these organisms as experimental tools. Major topics to be covered include gene action, control mechanisms, cytoplasmic genetic systems, recombination and conversion, morphogenetic systems and evolutionary aspects of physiological systems. Extensive appropriate reading in the original literature of genetics is a primary component of the course.

**489 Research in Genetics and Development.** Either term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material, written permission from the staff member who will supervise the work and assign the grade. Staff. Practice in planning, conducting, and reporting independent laboratory and/or library research programs.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate field representative.

**680 Current Topics in Genetics.** Either term. Credit two hours a term. Open to graduate students, with preference given to majors in the field of genetics; undergraduates by permission only. No auditors. Enrollment limited to 20 students. Time to be arranged. Staff.

**Animal Cytogenetics (Poultry Science 419, College of Agriculture and Life Sciences).**

**Cytology (Biological Sciences 347A and 347B).**

**Cytogenetics (Biological Sciences 440).**

**Evolutionary Theory (Biological Sciences 475).**

**Microbial Genetics (Biological Sciences 495A and 495B).**

**Physiological Genetics of Crop Plants (Plant Breeding 505, College of Agriculture and Life Sciences).**

**Plant Growth and Development (Biological Sciences 441).**

**Statistical Methods I (Statistics 510, College of Agriculture and Life Sciences).**

## Microbiology

**290A General Microbiology (Lectures).** Either term. Credit three hours. Prerequisite: Biological Sciences 101–102 or equivalent and Chemistry 104 or 108 or the equivalent. It is recommended that 290B be taken concurrently. Lectures, M W F 11:15. Fall Term, Mr. H. W. Seeley; spring term, Mr. VanDemark.

A study of the basic principles and relationships in the field of microbiology, with fundamentals necessary to further work in the subject. The course offering in the spring term will provide special emphasis on the application of microbiology in home economics and agriculture.

**290B General Microbiology (Laboratory).** Fall or spring term. Credit two hours. M W 2–4:25; T Th 8–11 or 2–4:25. Fall term, Mr. H. W. Seeley; spring term, Mr. VanDemark. A study of the basic principles and techniques of laboratory practice of microbiology with fundamentals necessary to further work in the subject.

**391A Natural Selection in the Bacteria.** Fall term. Credit three hours. Prerequisite: Biological Sciences 290



and 431 or consent of instructor; Biological Sciences 431 may be taken concurrently. Lectures, M W F 9:05. Mr. MacDonald.

A study of the comparative physiological and ecological relationships among bacteria and some related organisms. A number of groups of bacteria will be discussed in detail as well as factors which influence their ability to survive in nature. Parasitism, autotrophy, and evolution will be among the major topics discussed.

**391B Bacterial Ecology Laboratory.** Fall term. Credit three hours. Enrollment limited to 15. Prerequisite: concurrent registration in 391A and consent of instructor. Laboratory, M W F 1:30–4. Mr. MacDonald. Techniques for the isolation, cultivation, and detailed study of selected groups of organisms. Some of the more standard techniques of physiological study will be introduced. Emphasis will be placed on independent work.

**393 Applied and Industrial Microbiology.** Fall term. Credit three hours. Given in alternate years. Prerequisite: Biological Sciences 290 or equivalent. Lectures, T Th S 11:15. Messrs. Delwiche, Dondero, and VanDemark. A survey of the microbiology of industrial fermentations, water, and waste decomposition.

**394 Food Microbiology.** Spring term. Credit four hours. Prerequisite: Biological Sciences 290A, 290B. Graduate students must have permission of the instructor. Lectures, M W 12:20. Laboratory, M W 2–4:25. Mr. Naylor. The major families of microorganisms of importance in foods are studied systematically with emphasis on the role played by these organisms in food preservation, food fermentations, and public health. The laboratory work includes practice in the use of general and special methods for microbiological testing and control of food products as well as practice in the isolation and characterization of organisms found in foods.

**490A Microbial Physiology Lectures.** Spring term. Credit three hours. Prerequisite: 391A or permission of instructor. Primarily for microbiology majors intending to enter graduate school and for graduate students. Lectures, T Th S 10:10. Mr. Gibson.

A study of the organization of physiological processes in microorganisms, including a study of structure, energy-yielding mechanisms, macromolecular biosyntheses, and growth and regulation.

**490B Microbial Physiology Laboratory.** Spring term. Credit three hours. Enrollment is limited and preference will be given to students obtaining a grade of B– or better in Biological Sciences 391B. Prerequisite: coregistration in 490A and permission of instructor. Laboratory, F 9:05–4:25. One discussion period to be arranged. Mr. Gibson. Experiments on material covered in Course 490A will be used to introduce modern research techniques for the study of growth and physiological activities.

**492 Microbial Ecology.** Spring term. Credit two hours. Given in alternate years. Prerequisite: an elementary course in some facet of microbiology. M W 8. Mr. Alexander. An introduction to the basic principles of microbial ecology. Attention is given to behavior, activity, and interrelationships of bacteria, fungi, algae, and protozoa in natural ecosystems.

**495A Microbial Genetics, Lectures.** Fall term. Credit two hours. Prerequisite: Biological Sciences 281 and 290A, or permission of the instructor. For upperclassmen and graduate students. Lecture, W 1:30–9:25 p.m. Mr. Zahler. Genetics of bacteria and their viruses, with emphasis on the mechanisms of genetic phenomena.

**495B Microbial Genetics, Laboratory.** Fall term. Credit three hours. Prerequisite or parallel: Biological Sciences 495A. Permission of the instructor is required. Primarily for upperclassmen. Laboratory, T 1:25–4:25, and four other hours to be arranged. Mr. Zahler.

Problem solving in bacterial genetics.

**496 Selected Topics in Microbial Metabolism.** Spring term. Credit two hours. Prerequisite: beginning courses in general microbiology, biochemistry, and organic chemistry. Course intended for upperclassmen and graduate students. Lectures, M W 11:15. Mr. Delwiche.

Selected topics pertaining to the energy metabolism, oxidative and fermentative abilities, and biosynthetic capacities of microorganisms. Where possible and appropriate the subject matter deals with the various microbial forms in a comparative sense.

**498 Virology.** Spring term. Credit three hours. Given in alternate years. Prerequisite: Biological Sciences 290A and 281 or permission of the instructor. Lectures, T Th S 11:15. Mr. Naylor and others.

A study of the basic physical, chemical, and biological properties of plant, animal, and bacterial viruses.

**499 Research in Microbiology.** Either term. Credit and hours to be arranged. Undergraduates must attach to their preregistration material, written permission from the staff member who will supervise the work and assign the grade. This course cannot be used to fulfill the concentration requirement. Staff.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**590 Methods in Advanced Bacteriology.** Either term. Credit to be arranged. Limited enrollment. Prerequisite: permission of instructor. Primarily for graduate students in microbiology. Hours to be arranged. Staff.

**596 Molecular Immunology.** Spring term. Credit two hours. For advanced undergraduates and graduate students. Prerequisite: Biological Sciences 531 or permission of the instructor. W 7:30–9:25 p.m. Mr. Slobin.

**691 Graduate Seminar in Microbiology.** Either term. Credit one hour per term. Required of all graduate students majoring in microbiology. Time to be arranged. Staff.

**699 Microbiology Seminar.** Either term. Noncredit. Required of graduate students majoring in microbiology and open to all who are interested. Th 4:15. Staff.

**[Soil Microbiology (Agronomy 306, College of Agriculture).** Not offered in 1972–73.]

**Advanced Soil Microbiology (Agronomy 506, College of Agriculture and Life Sciences).**

**Immunochemistry (Veterinary Medicine 944, Veterinary College).**

**Animal Virology (Veterinary Medicine 945, Veterinary College).**

**Microbial Ecology (Agronomy 410, College of Agriculture and Life Sciences).**

**Basic Immunology Lecture (Veterinary Medicine 340, Veterinary College).**

**Pathogenic Microbiology (Veterinary Medicine 341, Veterinary College).**

**[Advanced Immunology Lecture (Veterinary Medicine 941, Veterinary College).** Not offered in 1972–73.]

**[Advanced Immunology Laboratory (Veterinary Medicine 942, Veterinary College).** Not offered in 1972–73.]

## Chemistry

Mr. G. G. Hammes, Chairman; Messrs. A. C. Albrecht, S. H. Bauer, C. A. Brown, J. M. Burlitch, W. D. Cooke, V. du Vigneaud, E. L. Elson, R. C. Fay, M. E. Fisher,

G. A. Fisk, J. H. Freed, M. J. Goldstein, R. Hoffmann, R. E. Hughes, F. A. Long, G. M. Loudon, F. W. McLafferty, W. T. Miller, G. H. Morrison, R. A. Plane, R. F. Porter, R. R. Rye, H. A. Scheraga, F. R. Scholer, M. F. Semmelhack, M. J. Sienko, D. A. Usher, B. Widom, J. R. Wiesenfeld, C. F. Wilcox.

## Chemistry Major

A major in chemistry permits considerable flexibility in the detailed planning of a course program. The required courses can be completed in three years, leaving the senior year open for advanced and independent work in all areas of chemistry: physical, organic, inorganic, analytical, theoretical, bioorganic, biophysical. A major in chemistry can also provide the necessary basis for significant work in related areas such as molecular biology, chemical physics, geochemistry, chemical engineering, solid state physics, and medicine.

The courses are arranged as a progression with some courses (including mathematics and physics) prerequisite to those which are more advanced. During the first year the student should normally register for general chemistry (preferably but not necessarily Chemistry 115), mathematics, a Freshman Seminars course, a foreign language if necessary or, in some instances, physics. Although Chemistry 115–116 is preferred, students may begin their programs with Chemistry 107–108 or Chemistry 103–104–108. Chemistry 115–116 is a limited enrollment course for those students with excellent preparation; students who are uncertain as to their preparation should consult the instructor. In the second year the student should complete calculus, take physics and organic chemistry, Experimental Chemistry I and II, and complete a course in Distribution (see p. 16). Physical Chemistry I and II and Experimental Chemistry III should be completed in the third year along with courses in Distribution if necessary. Advanced work in chemistry and related subjects could be pursued in the fourth year and, to some extent, in the earlier years as well. The opportunity for independent research is also available. All students with questions about details of a major program are encouraged to consult with the chairman of the Department of Chemistry or his representative. Entering students exceptionally well prepared in chemistry may receive advanced placement credit for Chemistry 107–108 and proceed to a more advanced program.

Prerequisites to admission to a major in chemistry are (1) Chemistry 115–116, or 107–108, or 103–104, 108; (2) Physics 207; and (3) Mathematics 111. A student is not encouraged to undertake a major in chemistry unless he has passed those prerequisite courses at a good level of proficiency.

As a minimum the following additional courses must then be completed for a major in chemistry: (1) Chemistry 301, 302, 303, 357–358, 389–390; (2) Mathematics 112, 213; (3) Physics 208. This sequence is a core program in chemistry. It is anticipated that the student will, through elective courses, extend it substantially in whatever direction suits his own needs and interests. It is particularly important that those going on to do graduate work in chemistry recognize that these requirements are minimal (indeed, they do not in themselves meet the standards recommended by the American Chemical Society for professional training), and such students are strongly urged to supplement their programs, where possible, with Chemistry 404, 405, 410, 468, 481, and German (or Russian). Even students not planning graduate work in chemistry should consider advanced work in physics and mathematics, courses in the biological sciences, and advanced work in chemistry, as possible extensions of the basic program.

## The Honors Program

The Honors program in chemistry offers superior students an opportunity to study independently in seminars and to gain additional experience by engaging in research during the senior year. It is particularly recommended to those who plan graduate work in chemistry. Prospective candidates for Honors should complete the introductory organic chemistry and physical chemistry sequences by the end of the junior year. However, failure to have completed those courses in the junior year does not in itself disqualify a student from the Honors program. Completion of the program at a high level of performance leads to the degree of Bachelor of Arts with Honors in chemistry. The requirements for admission to the Honors program are a cumulative average grade of at least B— and permission of the Department. Prospective candidates for Honors should discuss their plans with their advisers by March 1 of their junior year. Candidates for Honors must show outstanding performance in one of the following: 421, 433, 461, 477; and, in addition, 498.

## Distribution Requirement

The Distribution requirement in physical sciences is satisfied in chemistry by Chemistry 103, 107, or 115 and 104, 108, or 116.

General identification of the courses listed below is as follows:

Inorganic: 410, 421, 505–506, 515, 516.

Analytical: 236, 433, 525, 527, 528.

Organic: 353, 355, 357–358, 457, 461, 465–466, 565, 566, 570, 574.

Physical and Theoretical: 287–288, 289–290, 389–390, 477, 481, 578, 586, 589, 593, 594, 596, 598.

Bioorganic and Biophysical: 468, 572, 577, 582, 586.

Experimental: 301, 302, 303, 404, 405.

Environmental: 200, 470.

Note: Students registered for laboratory courses who do not appear at the first meeting of the laboratory will forfeit their registration. Students and members of the teaching staff are required to wear safety glasses or approved eye-protective devices in all chemistry laboratories. Those who fail to cooperate with the safety program may be asked to leave the laboratories.

**103–104 Introduction to Chemistry.** 103 Fall term only. 104 Spring term only. Credit three hours a term. Enrollment limited. Recommended for students who have not had high school chemistry and for those desiring a less mathematical course than Chemistry 107–108. Chemistry 103 is prerequisite to Chemistry 104. Lectures, M W 11:15 or 12:20. Laboratory, T or Th 8–11, F 10:10–1:10, M W or F 1:25–4:25. Preliminary examinations may be held in the evening. Fall term, Mr. Widom and assistants. Spring term, Mr. Brown and assistants.

An introduction to chemistry with emphasis on the important principles and facts of inorganic and organic chemistry.

**107–108 General Chemistry.** 107 Fall term only. 108 Spring term only. Credit: fall term, three hours; spring term, four hours. Enrollment limited. Recommended for those students who will take further courses in chemistry. Prerequisite: high school chemistry; 107 is prerequisite to 108. Preliminary examinations will be held in the evening. Lectures, Fall term T Th 9:05, 10:10 or 12:20; Spring term T Th 9:05 or 10:10. Laboratory, T Th or F 8–11; M T W Th or F 1:25–4:25. Spring term, one additional recitation hour to be arranged. Fall term, Mr. Scholer and assistants. Spring term, Mr. Sienko and assistants.

The important chemical principles and facts are covered, with considerable attention given to the quantitative aspects and to the techniques that are important for further work

in chemistry. Second term laboratory includes a systematic study of qualitative analysis.

Note: Entering students exceptionally well prepared in chemistry may receive advanced placement credit for Chemistry 107-108 by demonstrating competence in the Advanced Placement Examination of the College Entrance Examination Board, or in the departmental examination given at Ithaca before classes start in the fall (see page 10).

**115-116 General Chemistry and Inorganic Qualitative Analysis.** 115 Fall term only. 116 Spring term only. Credit: fall term, four hours; spring term, five hours. Enrollment limited. Recommended for students who intend to specialize in chemistry or in closely related fields. Prerequisite: high school chemistry and physics at a grade of 90 or higher; Chemistry 115 prerequisite to 116. Coregistration in a calculus course at the level of Mathematics 111 or 191 and/or high school calculus required. Calculus will be used in the course. Preliminary examinations may be held in the evening. Fall term: lectures, M W F 12:20; one laboratory period, T or Th 10:10-1:10, or T W Th or F 1:25-4:25. Spring term: lectures, M W 12:20. When announced in advance, quizzes, extra lectures, or recitations will be F 12:20. Two laboratory periods: M T 1:25-4:25, T Th 10:10-1:10; W F 8-11; W F 1:25-4:25, Th 1:25-4:25 and S 8-11. Fall term, Mr. Rye and assistants. Spring term, Mr. Fay and assistants.

An intensive, systematic study of the laws and concepts of chemistry, with considerable emphasis on mathematical aspects. Laboratory work will cover both qualitative and quantitative analysis.

**200 Man in his Chemical Environment.** Fall term. Credit three hours. Enrollment limited. Prerequisites: Chemistry 103-104 or 107-108. Lectures, T Th 12:20 and a discussion hour to be arranged. Mr. Sienko. The chemical aspects of the human environment including the composition and properties of materials as these affect man's environment. Chemical limitations on the balance between survival and quality of living.

**236 Introductory Quantitative Analysis.** Fall term. Credit four hours. Enrollment limited. Prerequisite: Chemistry 108 or advanced placement in chemistry. Preliminary examinations may be held in the evening. Lectures, T Th 12:20. Laboratory, M W or T Th 1:25-4:25; or F 1:25-4:25 and S 8-11, if warranted by sufficient registration. A study of the fundamental principles of quantitative chemistry. Laboratory experiments are designed to illustrate basic principles and practice of quantitative procedures.

**287-288 Introductory Physical Chemistry.** 287 Fall term only. 288 Spring term only. Credit three hours a term. Prerequisites: Chemistry 108 or 116 and Mathematics 111-112 or consent of the instructor. Chemistry 287 is prerequisite to 288. Lectures, W F 9:05; occasional lectures, M 9:05. Recitation, M W or F 1:25. Examinations may be given M 9:05 or evenings. Fall term, Mr. Elson and assistants. Spring term, Mr. Hughes and assistants. A systematic treatment of the fundamental principles of physical chemistry.

**289-290 Introductory Physical Chemistry Laboratory.** 289 Fall term only. 290 Spring term only. Credit two hours a term. Chemistry 289 is prerequisite to 290. Coregistration in Chemistry 287-288 required. Laboratory lecture, S 9:05. Laboratory, M T or W Th 1:25-4:25 or, if warranted by sufficient registration, F 1:25-4:25 and S 10-1. First hours of laboratory on M W or F devoted to Chemistry 287 recitation. Fall term, Mr. Albrecht and assistants. Spring term, Mr. Rye and assistants. The development of needed skills in the experimental aspects concerned with the fundamental principles of physical chemistry.

**301 Experimental Chemistry I.** Fall term. Credit four hours. Prerequisite or parallel: Chemistry 353 or Chemistry

357-358. Preliminary examinations may be held in the evening. Lectures, M Th 7:30 p.m. Two laboratory periods, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; F 1:25-4:25 and S 8-11. Mr. Wilcox and selected faculty.

An introduction to synthesis and the separation and handling of materials including applications of many types of chromatography; simple and fractional distillation; crystallization; extraction; etc.

**302 Experimental Chemistry II.** Spring term. Credit four hours. Prerequisite: Chemistry 301. Preliminary examinations may be held in the evening. Lectures, M Th 7:30 p.m. Two laboratory periods, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; F 1:25-4:25 and S 8-11. Selected faculty. A survey of the various aspects of qualitative and quantitative analysis of both inorganic and organic compounds including optical spectroscopy; NMR; mass spectroscopy; statistical analysis of data and electrochemical methods.

**303 Experimental Chemistry III.** Fall term. Credit four hours. Prerequisite: Chemistry 302 and Chemistry 389. Coregistration in Chemistry 389 is acceptable. Preliminary examinations may be held in the evening. Lectures, M Th 7:30 p.m. Two laboratory periods, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25; F 1:25-4:25 and S 8-11. Selected faculty.

An introduction to the techniques of vacuum line construction and operation; the principles and assembly of electronic measuring devices; optics and the determination of structure by x-ray diffraction.

**353 Elementary Organic Chemistry.** Either term. Credit four hours. Primarily for students in the pre-medical and biological curricula. Prerequisite: Chemistry 104 at a grade of C or better, or 108, or 116. Coregistration in Chemistry 301 or 355 is recommended. Preliminary examinations may be held in the evening. Lectures, M W F S 10:10. Fall term, Mr. Loudon. Spring term, Mr. Usher.

A study of the occurrence and properties of organic molecules and the mechanisms of organic reactions, including brief introduction to the organic chemistry of biological systems. The student should determine the entrance requirements for the particular medical school he wishes to enter. Students may obtain six hours credit by taking Chemistry 353-355, or eight hours credit from 301-353.

**355 Elementary Organic Laboratory.** Spring term. Credit two hours. Prerequisite or parallel: Chemistry 353 or 357. Enrollment is limited. Preliminary examinations may be held in the evening. Discussion-laboratory, M W 1:25-4:25; T Th 8-11; T Th 1:25-4:25.

An introduction to various laboratory techniques for the separation, purification, and analysis of organic compounds as they are applied to problems of natural products, of reaction kinetics, and of organic synthesis.

**357-358 Introductory Organic Chemistry.** 357 Fall term only. 358 Spring term only. Credit three hours a term. Required of candidates for the degree of A.B. with a major in chemistry. Prerequisite: Chemistry 108, or 116, or advanced placement in chemistry. Chemistry 357 is prerequisite to Chemistry 358. Parallel registration in Chemistry 301, 302, or 355 recommended. Preliminary examinations may be held in the evening. Lectures, M W F 9:05.

A systematic study of the more important classes of carbon compounds, reactions of their functional groups, methods of synthesis, relations, and uses.

**389-390 Physical Chemistry I and II.** 389 Fall term only. 390 Spring term only. Credit four hours a term. Required of candidates for the degree of A.B. with a major in chemistry who are encouraged to coregister in Chemistry 303. Prerequisites: Mathematics 213 or 221, Physics 208, Chemistry 108 or 116, or consent of the instructor. Chemistry 389 is prerequisite to 390. Lectures, M W F 10:10. Examinations and make-up lectures, Th 7:30 p.m. Fall term,

Mr. Fisher and assistants. Spring term, Mr. Porter and assistants.

A study of the more fundamental principles of physical chemistry from the standpoint of the laws of quantum mechanics, thermodynamics, and statistical mechanics.

**404 Advanced Instrumental and Physical Chemistry Laboratory.** Spring term. Credit four hours. Prerequisite: Chemistry 303. Hours to be arranged. Mr. Fisk and assistants.

Applications of modern experimental techniques in a variety of fields. Advanced techniques for modern structure determination; applications of on-line computing; cryogenic measurements; kinetic studies; activation analysis.

**405 Techniques of Modern Synthetic Chemistry.** Spring term. Credit four hours. Laboratory hours to be arranged on a flexible schedule. Enrollment may be limited. Mr. Burlitch and assistants.

The syntheses of complex organic and inorganic molecules will be carried out with emphasis on the following techniques: vacuum line, high-pressure, high-temperature solid state, inert atmosphere, nonaqueous solvents, radioactive labelling, photochemical and electrochemical methods.

**410 Inorganic Chemistry.** Fall term. Credit four hours. Prerequisite or corequisite: physical chemistry or consent of the instructor. Lectures, M W F 11:15.

Lectures and assigned readings with emphasis on structural properties and reaction mechanisms in inorganic chemistry. Level is that of *Concepts and Models of Inorganic Chemistry* by Douglas and McDaniel.

**421 Introduction to Inorganic Research.** Either term. Credit two or four hours. Prerequisites: Chemistry 389–390, 303 or 287–288, 289–290 with an average of B– or better or consent of the instructor. Hours to be arranged. Selected faculty.

Informal advanced laboratory and library work, planned individually in consultation with a staff member, involving the preparation and characterization of inorganic substances. A written report is required.

**433 Introduction to Analytical Research.** Either term. Credit two or four hours. Prerequisites: Chemistry 390, 303 with an average of B– or better or consent of the instructor. Hours to be arranged. Selected faculty. Informal research in the field of analytical chemistry involving both laboratory and library work.

**[457 Advanced Organic-Analytical Laboratory.** Spring term. Credit four hours. Primarily for seniors and graduate students in chemistry. Prerequisites: Chemistry 358 and Chemistry 302, or Chemistry 525, or consent of the instructor. Discussion, T Th 8. Laboratory, three of the following periods: T Th 8–11, M T W Th F 1:25–4:25, S 10:10–1:10. Not offered in 1972–73.]

**461 Introduction to Organic Research.** Either term. Credit two to four hours. For undergraduates; enrollment limited to those having a record of B– or better in prerequisite courses. Primarily for seniors and graduate students as preparation for advanced and independent work. Prerequisite: Chemistry 457 or consent of the instructor. Hours to be arranged. Selected faculty. Informal research in the field of organic chemistry involving both laboratory and library work.

**465 Advanced Organic Chemistry.** Fall term. Credit four hours. Primarily for graduate students and upperclass undergraduates. Prerequisites: Chemistry 353 or 358 and Chemistry 390 or consent of the instructor. Lectures, M W F 12:20. Examinations and make-up lectures, W 7:30 p.m. Mr. Goldstein.

A survey of the simplest organic reactions within the framework of a mechanistic approach. The principal aim is to provide the student with the skills and background needed to predict the reactivity patterns and stereochemical preferences of new molecules in a variety of

experimental environments. Qualitative applications of statistical thermodynamics and molecular orbital theory will be illustrated by readings from the current research literature.

**466 Synthetic Organic Chemistry.** Spring term. Credit four hours. Primarily for graduate students and upperclass undergraduates. Prerequisite: Chemistry 465 or consent of the instructor. Lectures, T Th 12:20 and a third hour to be arranged.

Modern techniques of synthesis; applications of organic reaction mechanisms to the problems encountered in rational multistep syntheses, with particular emphasis on newer developments.

**468 Chemical Aspects of Biological Processes.** Fall term. Credit four hours. Primarily for graduate students. Prerequisites: Chemistry 358, and 389–390 or 287–288 or their equivalents. Lectures, M W F 10:10. Make-up lectures, Th 7:30 p.m. Mr. Scheraga.

Biochemical systems, bioenergetics, enzymes, metabolic pathways. This course forms the chemical basis for the graduate program in molecular biology.

**[470 Chemical Ecology (Also Biological Sciences 466).** Spring term. Credit two hours. Given in alternate years.

Not offered 1972–73.] Primarily for seniors and graduate students. Prerequisites: Chemistry 353 or 357–358, Biological Sciences 101–102 and 101L–102L or equivalent, or consent of instructor. Lectures, M F 12:20. Messrs.

Alexander, Eisner, Feeny, and Whittaker.

Ecological and evolutionary significance of chemical interactions between organisms. Summary of key processes in regulation of natural populations. Survey of major classes of natural products with emphasis on appropriate analytical techniques. Chemical adaptations for reproduction, defense, habitat selection, dispersal, feeding efficiency, and competition in animals, plants, and microorganisms. Choice of adaptive strategy in relation to energy flow. Practical applications of chemical ecology.

**477 Introduction to Research in Physical Chemistry.** Either term. Credit two to four hours. Prerequisite: Chemistry 390 at an average of B– or better and consent of the instructor. Hours to be arranged. Selected faculty.

Informal advanced laboratory and library work in physical chemistry, planned individually in consultation with a staff member.

**481 Physical Chemistry III.** Fall term. Credit four hours. Prerequisites: Chemistry 288 or 390, Mathematics 213, and Physics 208. Lectures, M W F 9:05. Mr. Hammes.

A discussion of advanced topics in physical chemistry, including an introduction to the principles of quantum theory and statistical mechanics, atomic and molecular spectra, and elementary valence theory.

**498 Honors Seminar and Research.** Spring term. Credit four hours. Prerequisite: admission to the Honors program. Seminar, W 2:30. Laboratory hours to be arranged. Mr. Miller.

The seminar will be an informal presentation and discussion of selected topics in which all members participate. Individual research will be on advanced problems in chemistry under the guidance of a staff member. A written report on the research results is required.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**505–506. Advanced Inorganic Chemistry.** 505 Fall term only. 506 Spring term only. Credit four hours a term. Prerequisite: Chemistry 389–390 or consent of the instructor. Chemistry 505 is prerequisite to 506. Lectures, M W F 11:15. Fall term, Mr. Fay. Spring term, Mr. Scholer.

**516 Selected Topics in Advanced Inorganic Chemistry.** Spring term. Credit two hours. S–U grades only. Prerequisite: Chemistry 390. Lectures, T Th 12:20.



**525 Advanced Analytical Chemistry I.** Fall term. Credit four hours. Open to undergraduates with consent of the instructor. Prerequisite: Chemistry 288 or 390. Lectures, M W F 8. Examinations will be held T 7:30 p.m. Mr. Cooke.

**527 Advanced Analytical Chemistry II.** Spring term. Credit three hours. Primarily for graduate students. Prerequisite: Chemistry 288 or 390. Lectures, T Th 9:05. Given in alternate years. Offered 1972-73.

**[528 Advanced Analytical Chemistry III.** Spring term. Credit three hours. Primarily for graduate students. Prerequisite: Chemistry 288 or 390. Lectures, T Th 9:05. Given in alternate years. Not offered 1972-73.]

**565 Physical Organic Chemistry.** Spring term. Credit four hours. Primarily for graduate students. Prerequisite: Chemistry 465 or consent of the instructor. Lectures, M W F 12:20. Examinations and make-up lectures, W 7:30 p.m. Mr. Goldstein.

**[566 Physical Organic Chemistry.** Spring term. Credit three hours. Primarily for graduate students. Prerequisite: Chemistry 565 or consent of the instructor. Lectures, T Th 12:20. Not offered in 1972-73.]

**570 Selected Topics in Organic Chemistry.** Fall term. Credit three hours. Primarily for graduate students. Prerequisites: Chemistry 465-466 or consent of the instructor. Lectures, T Th 12:20.

**572 Enzyme Catalysis.** Spring term. Credit four hours. Primarily for graduate students in chemistry and biochemistry. Prerequisites: Chemistry 357-358 or the equivalent and a course in general biochemistry. Lectures, M W F 11:15. Mr. Loudon.

**574 Chemistry of Natural Products.** Fall term. Credit three hours. Primarily for graduate students. Prerequisites: Chemistry 465-466. Lectures, T Th 12:20.

**[577 Chemistry of Nucleic Acids.** Spring term. Credit four hours. S-U grades only. Primarily for graduate students. Prerequisites: Chemistry 358 and 390. Lectures, M W F 8. Given in alternate years. Not offered 1972-73.]

**578 Thermodynamics.** Spring term. Credit four hours. Primarily for graduate students. Prerequisite: Chemistry 288 or 390. Lectures, T Th S 10:10, and a discussion period to be arranged. Mr. Fisk.

**580 Principles of Chemical Kinetics.** Fall term. Credit four hours. Prerequisites: Chemistry 481 and 578 or consent of the instructor. Lectures, M W F 9:05. Mr. Bauer.

**582 Special Topics in Molecular Biology.** Fall term. No credit. Primarily for graduate students. Lectures, T Th 11:15.

**586 Physical Chemistry of Proteins.** Spring term. Credit four hours. Primarily for graduate students. Prerequisite: Chemistry 288 or 390. Lectures, M W F 8:00, S 11:15, occasional lectures, W 7:30 p.m. Offered in alternate years. Offered in 1972-73.

**[589 X-Ray Crystallography.** Fall term. Credit four hours. Prerequisites: Physics 322 or consent of the instructor. M W F 12:20. Not offered in 1972-73.]

**593 Quantum Mechanics I.** Fall term. Credit four hours. Prerequisites: Chemistry 481 and coregistration in Mathematics 421 and Physics 431 or equivalents, or consent of the instructor. Lectures, T Th S 9:05. Mr. Freed.

**594 Quantum Mechanics II.** Spring term. Credit four hours. Prerequisites: Chemistry 593 or the equivalent and coregistration in Physics 432 and Mathematics 422, or the consent of the instructor. Lectures, M W F 10:10. Mr. Albrecht.

**596 Statistical Mechanics.** Spring term. Credit four hours. Primarily for graduate students. Prerequisite: Chemistry 593 or the equivalent. Lectures, M W F 9:05. Mr. Widom.

**598 Selected Topics in Physical Chemistry.** Spring term. Credit four hours. Lectures, T Th S 9:05.

**600 General Chemistry Seminar.** Throughout the year. No credit. Required of all graduate students except those majoring in organic or bioorganic chemistry. Open to qualified juniors and seniors. Th 4:40.

**601-602 Introductory Graduate Seminar in Analytical, Inorganic, and Physical Chemistry.** 601 Fall term only. 602 Spring term only. No credit. Required of all first-year graduate students majoring in analytical, inorganic, physical, and theoretical chemistry, and molecular biology. Hours to be arranged.

**650-651 Seminar in Organic Chemistry.** 650 Fall term only. 651 Spring term only. No credit. Required of all graduate students majoring in organic chemistry. Open to qualified juniors and seniors. T 8:15 p.m.

**700 Baker Lectures.** Either term. No credit. T Th 11:15. Fall term, Mr. Heilbronner.

## The Classics

Mr. G. M. Kirkwood, Chairman; Mr. F. M. Ahl, Ms. Elizabeth Asmis, Messrs. K. E. Clinton, J. E. Coleman, G. M. Messing, P. Moore, P. Pucci, M. C. Stokes.

The Department of Classics offers majors in the Classics, Greek, Latin, and Classical Civilization.

## Classics

Those whose major study is in the Classics must complete twenty-four hours of advanced courses in Greek or Latin (courses numbered above 201) and fifteen hours, selected after conference with the adviser, in related subjects. Related subjects for this purpose are all courses listed below under the headings "Classical Linguistics" and "Classical Civilization" or in ancient philosophy and selected courses in comparative literature, linguistics, modern foreign languages and literatures, and Semitic languages and literatures.

## Classical Civilization

Those whose major study is in Classical Civilization must complete (a) qualification in Latin and Greek or proficiency in either; (b) twenty-four hours selected from the courses listed below under Classical Civilization, Latin and Greek; and (c) fifteen hours in related subjects. Related subjects for this purpose may be any courses in the humanities but selected in conference with the adviser so as to form a coherent and significant experience in the relation between antiquity and subsequent periods in the Western tradition; related subjects may include courses listed under "Classical Civilization" which have not been used to satisfy requirement (b).

## Greek

Those whose major study is in Greek must complete twenty-four hours of advanced courses in Greek and fifteen hours in related subjects (including Latin). One or more courses offered by the Department of Comparative Literature may be counted towards the required twenty-four hours of Greek if the student obtains the prior approval of his major adviser. Related subjects for this purpose are as defined under the Classics Major with the addition of Latin.

## Latin

The major in Latin is parallel to the major in Greek.

## Study Abroad

Cornell is a joint participant with a number of universities in the Intercollegiate Center for Classical Studies in Rome, where Classics majors and other students with a substantial interest in Classics are able to do a term or more of work, with regular Cornell credit, in Latin, Greek, classical art and archaeology, ancient history, and Italian. Class work is interspersed and coordinated with field trips. Detailed information on the Center is available in the Department office.

## The Honors Program

Candidates for the degree of Bachelor of Arts with Honors in Classics, Greek, Latin, or Classical Civilization must fulfill the requirements of the appropriate major study, as prescribed in the foregoing paragraphs, and must also complete successfully the special Honors courses 370, 371, and 372. Credit for Honors courses may be included in the hours required for the major study. Students who wish to become candidates for Honors and who have a cumulative average of B— or better should consult some member of the Department before preregistering for the second term of the junior year.

## Greek Civilization, Roman Civilization

See p. 22 and the Programs in Greek Civilization and Roman Civilization at the end of the Courses of Instruction section.

## Distribution Requirement

The Distribution requirement in the Humanities is satisfied in Classics by (a) any two courses in Greek beginning with 201 or in Latin beginning with 207 that form a reasonable sequence; but no course may be used for this requirement if it has been used for the language requirement; (b) two of the following: Classical Civilization 119, 120, 121, 122 (unless used for the Freshman Seminar requirement), 200, 220, 319, 320; Comparative Literature 313, 314, 323, 340, 400.

## Greek

**101 Greek for Beginners.** Either term. Credit four hours. M W F 12:20, Th 9:05 or M W F 1:25, T 9:05. Fall term, Mr. Ahl, Mr. Clinton. Spring term, Miss Asmis. Introduction to Attic Greek. Designed to enable the student to read the ancient authors as soon as possible.

**103 Attic Greek.** Either term. Credit three hours. Prerequisite: Greek 101. M W F 12:20. Fall term, Mr. Kirkwood. Spring term, Mr. Pucci. Continuation of Greek 101, and readings in Plato.

**201 Attic Authors:** Plato, *Apology*; Euripides, *Medea*. Fall term. Credit three hours. Prerequisite: Greek 103. T Th S 10:10. Mr. Stokes.

Attention is given both to the exact understanding of the Greek texts and to relevant broad literary and historical questions.

**203 Homer.** Spring term. Credit three hours. Prerequisite: Greek 103. T Th S 10:10. Miss Asmis. Readings in Homeric epic and consideration of such literary problems as the authorship, unity, and style of the epics and their relation to oral and literary epic.

**209–210 Greek Composition.** 209 Fall term, 210 Spring term. Credit two hours a term. Prerequisite: Greek 103 or the equivalent. W 2:30 and a second hour to be arranged. Fall term, Mr. Coleman.

An exercise course to provide review and further study

of the forms and, more especially, the syntax of ancient Greek. Recommended as a companion course to Greek 201 and 203. The second meeting is devoted entirely to exercise in reading passages of Greek at sight.

**[301 Greek Historians.** Fall term. Credit four hours. Prerequisite: Greek 203. Not offered in 1972–73.]

**[302 Greek Tragedy.** Spring term. Credit four or five hours. An extra meeting once a week for an additional credit hour will be used for related reading in translation. Prerequisite: Greek 203 or the equivalent. Not offered in 1972–73.]

**305 Aristophanes and Attic Prose.** Fall term. Credit four hours. Prerequisite: Greek 203. T Th S 10:10.

**306 Greek Melic, Elegiac, and Bucolic Poetry.** Spring term. Credit four hours. Prerequisite: Greek 203 or the equivalent. T Th S 10:10. Mr. Kirkwood.

**401–402 Independent Study.** For qualified majors.

**409–410 Advanced Greek Composition.** 409 Fall term; 410 Spring term. Credit two hours a term. Prerequisite: Greek 209–210 or the equivalent. Th 12:20 and a second hour to be arranged. Fall term, Mr. Messing. Spring term, Mr. Clinton.

**[442 Greek Philosophy.** Spring term. Credit four hours. Prerequisite: two terms of Greek at the 300 level. Not offered in 1972–73.]

For complete descriptions of graduate courses, consult the graduate Field representative.

## 501–502 Independent Study for Graduate Students.

## Seminars for Graduate Students

**571 Seminar.** Fall term. Credit four hours. Th 3:35–5:30. Mr. Stokes.

**572 Seminar.** Spring term. Credit four hours. Th 3:35–5:30. Mr. Pucci.

**111 Modern Greek.** Spring term. Credit three hours. No prerequisite. M W F 9:05. Mr. Messing. Introduction to the language and reading of easy texts.

## Latin

Final placement in freshman Latin courses, other than beginning Latin, is determined by an examination administered by the Department of Classics in the orientation period preceding the fall term. Tentative placement is made on the basis of the previous training listed below as prerequisite for each course and of College Board Achievement Test scores.

**105 Latin for Beginners.** Fall term. Credit three hours. M W F 1:25, T 9:05. Mr. Moore.

An introductory course in the essentials of the Latin language, designed for rapid progress toward reading the principal Latin authors.

**106 Elementary Latin.** Spring term. Credit three hours. Prerequisite: 105 or placement by departmental examination. M W F 1:25.

Continues the work of Latin 105, followed by readings from various authors.

**108 Freshman Course: Selections from Cicero.** Fall term. Credit three hours. Prerequisite: Latin 106 or two units of entrance Latin. M W F 9:05. Begins with a comprehensive but rapid review of the fundamentals of Latin. Selections from Cicero or Virgil will be read.

**207 Catullus and Horace.** Fall term. Credit three hours. Prerequisite: Latin 108 or three units of entrance Latin. M W F 9:05 or 11:15. Mr. Moore.

Reading consists of selections from the lyric poetry of Catullus and Horace.

**208 Roman Life.** Spring term. Credit three hours.

Prerequisite: Latin 108 or 207. M W F 11:15.

Selections from the *Satyricon* of Petronius, the letters of Pliny the Younger, and the epigrams of Martial.

**215 Roman Comedy.** Fall term. Credit three hours.

Prerequisite Latin 208 or the equivalent; open to freshmen by Advanced Placement Examination or by exceptionally high standing in the Departmental placement examination. M W F 10:10. Mr. Kirkwood.

Plautus and Terence; at least one comedy of each playwright.

**216 Roman Didactic Poetry.** Spring term. Credit three hours.

Prerequisite: Latin 215. M W F 10:10. Mr. Moore. Selections from Lucretius' *De Rerum Natura* and Virgil's *Georgics*.

**241-242 Latin Composition.** 241 Fall term; 242 Spring term. Credit two hours a term. Prerequisite: Latin 208 or consent of the instructor. F 2:30 and a second hour to be arranged.

An exercise course to provide review and further study of the forms and, more especially, the syntax of Latin. Recommended as a companion course to Latin 215-216. The second meeting is devoted entirely to exercise in reading passages of Latin at sight.

**315 Roman Satire: Horace and Juvenal.** Fall term.

Credit four hours. Prerequisite: Latin 216. M W F 11:15. Miss Asmis.

**316 Roman Epic: Virgil and Lucan.** Spring term. Credit four hours.

Prerequisite: Latin 315 or the equivalent. M W F 11:15. Mr. Ahl.

**[317 Roman Historiography: Livy, Tacitus, Sallust.** Fall term. Credit four hours. Prerequisite: Latin 216. Not offered in 1972-73.]

**[318 Augustan Poetry.** Spring term. Credit four hours.

Prerequisite: Latin 317 or the equivalent. Horace's *Epistles*, *Ars Poetica*; Virgil's *Aeneid VI*. Not offered in 1972-73.]

**367-368 Medieval Latin Literature.** 367 Fall term;

368 Spring term. Credit four hours a term. Prerequisite: three years of high school Latin or consent of the instructor. Hours to be arranged. Fall term, Mr. Messing. Spring term, Mr. Wetherbee.

**441-442 Latin Composition: Advanced Course.** 441 Fall

term; 442 Spring term. Credit two hours a term. For undergraduates who have completed Latin 241-242 and for graduate students. T 12:20 and a second hour to be arranged.

**451-452 Independent Study.** For qualified majors.

For complete descriptions of graduate courses, consult the graduate Field representative.

**551-552 Independent Study for Graduate Students.**

**Seminars for Graduate Students**

**579 Seminar.** Fall term. Credit four hours. T 3:35-5:30. Mr. Ahl.

**580 Seminar.** Spring term. Credit four hours. T 3:35-5:30. Instructor to be announced.

**Honors Courses**

**370 Honors Course.** Spring term. Credit four hours. To be taken in the junior year.

A program of readings and conferences centered on an author or a topic chosen in accordance with the special interests of the students and instructor.

**371 Honors Course.** Fall term. Credit four hours. To be taken in the senior year. Mr. Clinton. Continuation of 370, with change of author or topic.

**372 Honors Course: Senior Essay.** Spring term. Credit four hours. For students who have successfully completed Classics 371. Topics must be approved by the Honors adviser at the end of the first term of the senior year. Miss Asmis.

**Classical Linguistics**

**Comparative Indo-European Linguistics (Linguistics 521-522).**

**425 Greek Dialects.** Fall term. Credit four hours. Hours to be arranged. Mr. Messing.

Selected inscriptions will be read in the various ancient Greek dialects, including Mycenaean.

**Classical Civilization**

For descriptions of the freshman seminars, see Freshman Seminars Program, p. 29.

**119 Freshman Seminar in Greek Literature.** Fall term. Credit three hours. Mr. Ahl, Miss Asmis.

**120 Freshman Seminar in Latin Literature.** Spring term. Credit three hours. Mr. Moore.

**[121 Freshman Seminar in Greek Philosophy.** Fall term. Credit three hours. Mr. Stokes. Not offered in 1972-73.]

**122 Freshman Seminar in Greek Mythology and Religion.** Spring term. Credit three hours. Mr. Clinton.

**200 The Greek and Roman Experience.** Fall term. Credit three hours. M W F 2:30.

A general introduction to Greco-Roman civilization. The approach will be unusual and varied in that most members of the Classics Department and some professors in related fields will participate, giving lectures within the area of their special scholarly interests. This organization will permit a wide range of lectures on prehistory and history, archaeology and art, literature and languages, philosophical, religious, and social questions. Emphasis will be on the Greco-Roman response to basic and enduring social and intellectual problems, as expressed in the poetry, philosophy, and religion of the Greeks and Romans, in their art, and in their political and social institutions. Ample opportunity will be given for discussion and student participation. Selected readings, in translation, in important Greek and Latin works of literature, history, and philosophy.

**Greek Philosophy (Program in Greek Civilization 214).**

**220 Introduction to Classical Archaeology.** Fall term. Credit three hours. M W F 10:10. Mr. Coleman.

Life in the Classical World as revealed by the archaeologist's spade, from the pioneering discoveries to the results of modern scientific excavation: market places and sanctuaries, everyday objects and dedications to the gods, tombs and their treasures.

**313 Greek Foundations of Western Literature.** Fall term. Credit four hours. M W F 11:15. Mr. Clinton.

Reading and discussion of major works of Greek literature, in translation, from Homer through the period of the Roman empire. They will be considered primarily as works of art, with special attention given to the traditions of the various genres.

**314 Latin Foundations of Western Literature.** Spring term. Credit four hours. M W F 11:15. Mr. Ahl.

The Roman quest for freedom: Selections (in translation) from Polybius, Lucilius, Cicero, Vergil, Ovid, Seneca, Lucan, Statius, Tacitus, Juvenal, Apuleius, Julian the Apostate, Prudentius, Claudian, and Symmachus. This course will examine how the Roman ideal of republican

freedom affected the development of Latin literature, and how, with the loss of political freedom, the Romans began to be more receptive to the religious ideals of Mithraism and Christianity, and prepared the basis for medieval thought.

**319 Aegean Art and Archaeology.** Fall term. Credit four hours. No prerequisite. M W F 2:30. Mr. Coleman. Early civilizations of the Aegean from the Neolithic period to the end of the Bronze Age (ca. 1100 B.C.) with special emphasis on the Minoans and Mycenaeans.

**[320 Art and Archaeology of Classical Greece.** Spring term. Credit four hours. Prerequisite: Classical Civilization 220 or consent of instructor. Not offered in 1972-73.]

**Foundations of Western Thought (Comparative Literature 323).**

**[Humanism and the Renaissance (Comparative Literature 340).** Not offered in 1972-73.]

**Greek and Roman Drama (Comparative Literature 400).**

**[Seminar in Latin Paleography (History 639-640).** Not offered in 1972-73.]

**Ancient Philosophy (Philosophy 201).**

**[Plato and Aristotle (Philosophy 403).** Not offered in 1972-73.]

**[Ancient Greek History (History 301).** Not offered in 1972-73.]

**[The Roman Revolution, 146-44 B.C. (History 431).** Not offered in 1972-73.]

**[Early Imperial Rome (History 432).** Not offered in 1972-73.]

**[Classical Greece, 510-404 B.C. (History 433).** Not offered in 1972-73.]

**[Classical Greece, 404-338 B.C. (History 434).** Not offered in 1972-73.]

**511-512 Independent Study for Graduate Students.**

## Comparative Literature

Mr. E. Rosenberg, Acting Chairman; Messrs. W. W. Holdheim, W. Kennedy, B. Pedersen, R. Roopnaraine. Also cooperating: Messrs. M. H. Abrams, B. B. Adams, C. Morón-Arroyo, Miss Elizabeth Asmis, Messrs. G. P. Biasin, E. A. Blackall, Miss Maria Calderón, Mr. A. Caputi, Miss Patricia Carden, Messrs. M. A. Carlson, C. M. Carmichael, H. W. Chalsma, Miss Alice Colby, Mrs. Lucy Collings, Messrs. D. Connor, H. Deinert, H. Dieckmann, J. M. Echols, D. D. Eddy, S. B. Elledge, A. Ettin, Mrs. Inta Ezergailis, Messrs. G. Gibian, S. Gilman, P. A. Gottschalk, Mrs. Anita Grossvogel, Messrs. D. I. Grossvogel, N. Hertz, T. D. Hill, J. Hutton, A. L. Ivry, H. P. Kahn, Mrs. Carol Kaske, Messrs. R. E. Kaske, G. M. Kirkwood, E. P. Morris, P. Pucci, I. Rabinowitz, F. Reichmann, Mrs. Sandra Siegel, Messrs. B. O. States, M. C. Stokes, Mrs. Etsuko Terasaki, Mr. W. Wetherbee III.

The Department of Comparative Literature offers no undergraduate major program. Certain of its courses may, however, be counted toward the major requirements of other departments, at their option. For information consult the English, Classics, French, Russian, and German sections in this *Announcement*. For information about other related courses consult the offerings in Classics, English, German, Romance studies, Russian, Semitic studies, Asian studies, history, philosophy, the fine arts, music, and theatre arts.

## Distribution Requirement

The distribution requirement in the humanities may be satisfied by any of the 200- or 300-level courses in literature which form a sequence.

**101 The Defense of Art in the Literary Work.** Credit three hours. For description, see Freshman Seminars Program, p. 29.

**102 The Art of Narrative and the Unknown.** Credit three hours. For description, see Freshman Seminars Program, p. 29.

**103 Varieties of the Imagination in Literature.** Credit three hours. For description, see Freshman Seminars Program, p. 30.

**201-202 The Reshaping of Tradition in European Literature.** 201 Fall term only; 202 Spring term only. Credit three hours. Limited to 20 students. M W F 10:10. Mr. Kennedy and staff.

Study and discussion of the telling and the retelling of landmark motifs in selected great books of the Western tradition. First semester: comparison of ancient and modern, e.g., Aeschylus, *Oresteia*—Sartre, *The Flies*; Homer, *Odyssey*—Joyce, *Ulysses*. Second semester: comparison of medieval, Renaissance and modern, e.g., Dante, *Inferno*—T. S. Eliot, *Waste Land*; Molière, *Don Juan*—Camus, *Myth of Sisyphus*.

**Russian Literature (Russian 207).** (Formerly Comparative Literature 207.) Fall term. Credit three hours. Enrollment limited to 60 students. M W F 12:20. Ms. Carden. Readings in English translation. Pushkin, Gogol, Turgenev, and Goncharov.

**Russian Literature (Russian 208).** (Formerly Comparative Literature 208.) Spring term. Credit three hours. Enrollment limited to 60 students. (Students who took 207 have priority in registering for 208.) M W F 12:20. Mr. Chalsma. Readings in English translation. Dostoevsky, Tolstoy, Chekhov, Babel, and others.

**212 The European Epic.** Spring term. Credit three hours. M W F 11:15. Mrs. Kaske.

Close study of the artistic values and cultural significance of the *Iliad*, the *Aeneid*, *The Divine Comedy*, and *Paradise Lost*, with some attention to Medieval national epics, e.g., *The Song of Roland*. Lectures and discussion.

**[215 The Writer, His Work, and the World.** Fall term. Credit three hours.

Especially recommended for freshmen; open to all students. M W F 10:10. Mr. Gilman and Mr. Chalsma. Not offered in 1972-73.]

**313 Greek Foundations of Western Literature. (Also Classics 313).** Fall term. Credit four hours. M W F 11:15. Mr. Clinton.

Reading and discussion of major works of Greek Literature, in translation, from Homer through the period of the Roman empire. They will be considered primarily as works of art, with special attention given to the traditions of the various genres.

**314 Latin Foundations of Western Literature.** Spring term. Credit four hours. M W F 11:15. Mr. Ahl.

The Roman quest for freedom: Selection (in translation) from Polybius, Lucilius, Cicero, Vergil, Ovid, Seneca, Lucan, Statius, Tacitus, Juvenal, Apuleius, Julian the Apostate, Prudentius, Claudian, and Symmachus. This course will examine how the Roman ideal of republican freedom affected the development of Latin literature, and how, with the loss of political freedom, the Romans began to be more receptive to the religious ideals of Mithraism and Christianity, and prepared the basis for medieval thought.

**323 Foundations of Western Thought.** Fall term. Credit four hours. M W F 12:20. Mr. Stokes.



Introduction to the attitudes, concepts, and methods that characterized intellectual movements in ancient Greece, with special emphasis on the fifth and fourth centuries B.C. Selected writings of Greek poets, historians, philosophers, and scientists will be read in English translation.

**325 Classic and Renaissance Drama.** Fall term. Credit four hours. M W F 9:05. Mr. Carlson. Readings in world drama from the Greeks to Shakespeare, including such dramatists as Aeschylus, Sophocles, Aristophanes, Plautus, Kalidasa, Zeami, Machiavelli, Lope de Vega, Calderón, and Marlowe.

**326 European Drama 1660–1900.** Spring term. Credit four hours. M W F 9:05. Mr. Caputi. Readings from major dramatists from Molière to Ibsen, including such authors as Racine, Congreve, Sheridan, Schiller, Goethe, Hugo, Büchner, Gogol, Turgenev, Zola, Hauptmann, and Chekov.

**327 Modern Drama.** Spring term. Credit four hours. M W F 1:25. Mr. Kaufman. Readings from major dramatists of the twentieth century, including such authors as Shaw, Pirandello, Brecht, O'Casey, O'Neill, Williams, Miller, Lorca, Beckett, Ionesco, Genet, Pinter, Dürrenmatt, and Albee.

A complete listing of all courses in dramatic literature at Cornell may be found under Theatre Arts.

**329–330 The Literature of Europe Since the Renaissance.** Credit four hours a term. 329 Fall term only: M W F 10:10, Mr. Ettin. 330 Spring term only: M W F 10:10, Mr. Gottschalk. Fall term: The intellectual and cultural trends of the Renaissance, especially the responses of Renaissance intellectuals to the problems of their world. Authors, predominantly continental, will include Petrarch, Boccaccio, Rabelais, Machiavelli, Erasmus, Montaigne, Marlowe, Shakespeare, and Milton. Spring term: Reading of such representative novelists as Fielding, Goethe, Stendhal, Dostoevsky, and Sartre; and such representative dramatists as Byron, Ibsen, Chekov, Shaw, and Ionesco. Emphasis will be on literary technique and the evolution, from the Romantic period, of modern attitudes toward individualism.

**333–334 Medieval Literature.** Credit four hours a term. 333 Fall term only: M W F 12:20, Mr. Kaske. 334 Spring term only: T Th 11:15, and one additional hour to be arranged, Mr. Hill. Fall term: analysis and interpretation of great medieval literary works in translation. Though readings will vary somewhat from year to year, a typical program would be *Beowulf*; *Chanson de Roland*; *Njáls saga*; a romance of Chretien; Wolfram's *Parzival*; Gottfried's *Tristan*, and/or *Sir Gawain and the Green Knight*; *Pearl*; *Piers Plowman*. Spring term: Dante in translation.

**[347 European Drama 1660–1800.** Fall term. Credit four hours. M W F 1:25. Prerequisite: reading knowledge of either French or German. Mr. Carlson. Not offered in 1972–73.]

**351–352 The Modern European Novel.** Credit four hours a term. 351 Fall term only: M W F 12:20, Mr. McConkey. 352 Spring term only: M W F 12:20, Mr. Pedersen. A survey of the European novel studied in historical sequence but with particular attention to the variety of forms of the genre. The first semester will treat works from the Renaissance through the early nineteenth century, and the second semester will come up to the present. The reading list will vary from year to year. A typical list of authors would be: fall term, Cervantes, Mme. de Lafayette, Sterne, Diderot, Laclos, Goethe, Hoffmann; spring term, Gogol, Balzac, Flaubert, Eliot, Dostoevsky, Proust, Mann, Grass.

**The Russian Novel (Russian 367).** (Formerly Comparative Literature 367.) Fall term. Credit four hours. T Th 9:05 and one hour to be arranged. Mr. Gibian. Works by Turgenev, Dostoevsky, Tolstoy, and others.

**Soviet Literature (Russian 368).** (Formerly Comparative Literature 368.) Spring term. Credit four hours. T Th 9:05 and one hour to be arranged. Mr. Gibian. An introduction to selected works of Russian literature, from 1917 to date, examined as works of art and as social and historical documents.

**[379 Southeast Asian Literature.** Fall term. Credit four hours. T 2:30–4:25. Mr. Echols. Not offered in 1972–73.]

**The Literature of the Old Testament (Semitics 309)**

**Studies in Christian Origins (Semitics 305–306)**

**Biblical Law (Semitics 307–308)**

**The Literature of the Pre-Tannaitic Judaism (Semitics 310)**

**Chinese Historical and Philosophical Literature (Asian Studies 371)**

**Chinese Imaginative Literature (Asian Studies 372)**

**Twentieth-Century Chinese Literature (Asian Studies 373)**

**Japanese Literature before 1603 (Asian Studies 375)**

**Japanese Literature from 1603 to the Present (Asian Studies 376)**

**Japanese Drama (Asian Studies 377)**

**Russian Theatre and Drama (Russian 332)**

**400 Greek and Roman Drama.** Spring term. Credit four hours. M W F 11:15. Mr. Kirkwood.

A study, by lecture and discussion, of the evolution of forms and themes in ancient tragedy and comedy as exemplified by representative plays, read in translation, of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence, and Seneca. Consideration is given also the origins of tragedy and comedy and to the ancient theatre. Main emphasis is on tragedy, with some attention to the influence of Greek tragedy and Seneca on later European tragedy.

**402 Allegory and Symbolism.** Fall term. Credit four hours. M W F 10:10. Mrs. Kaske. Definitions and models drawn from the *Divine Comedy* will be related to a reading of works ranging from classical to modern: the myths of Plato, the *Romance of the Rose*, mystical lyrics of St. John of the Cross, selections from *The Faerie Queene*, and *Faust Part II*.

**404 Medieval Arthurian Literature.** Spring term. Credit four hours. T Th S 10:10. Mr. Wetherbee. A survey of Arthurian literature from the twelfth to the fifteenth century. Special attention will be given to the relations of the English and French Arthurian traditions. Reading will include selections from the *Mabinogion*, the *Didot Perceval*, the Middle English alliterative *Morte Arthure*, *Sir Gawain and the Green Knight*, and works of Marie de France, Chrétien de Troyes, Chaucer, and Sir Thomas Malory.

**408 Ancient and Renaissance Literary Criticism.** Spring term. Credit four hours. M W F 9:05. Mr. Hathaway. A study of ancient and Renaissance poetic and rhetorical theory, with special reference to Plato, Aristotle, Horace, Quintilian, and Longinus, and to Scaliger and Castelvetro as Renaissance interpreters of the classical formulation.

**[416 Myth and Literature.** Spring term. Credit four hours. M W F 1:25. Not offered 1972–73.]

**422 Nature and Norms in Renaissance and Baroque Literature.** Spring term. Credit four hours. M 1:25–3:30. Mr. Kennedy.

## 62 Computer Science

A study of whether it is better for men to live according to the principles of nature or according to social norms in the following writers: Machiavelli, Ronsard, Tasso, Montaigne, Donne, Shakespeare, and Molière.

**[423 From Petrarchism to Baroque.** Fall term. Credit four hours. M W F 1:25. Mr. Kennedy. Not offered in 1972-73.]

**436 Politics and the Novel (Formerly Russian 436).** Fall term. Credit four hours. T Th 2:30 and one hour to be arranged. Mr. Ripp.  
A consideration of the link between midnineteenth century Russian social movements and literature. Attention to non-Russian parallels. Reading includes Herzen, Chernyshevsky, Dostoevsky, Turgenev.

**[440 Autobiography as a Literary Form.** Spring term. Credit four hours. Mr. Holdheim. Not offered in 1972-73.]

**442 Major Dramatists and Dramatic Forms.** Fall term. Credit four hours. M W F 1:25. Mr. Carlson.

**[450 The History of the Book.** Spring term. Credit four hours. Enrollment limited to 15 students. Prerequisite: consent of the instructors. M 7-9 p.m. Messrs. Eddy, P. Kahn, and Reichmann. Not offered in 1972-73.]

**[452 Modern Parody.** Spring term. Credit four hours. T 2:30-4:25. Mr. Pedersen. Not offered in 1972-73.]

**453 The Picaresque Novel (Also Spanish 455).** Fall term. Four hours credit. M W F 9:05. Mr. Arroyo.  
Prerequisite: consent of instructor.  
The Spanish Picaresque from *El Lazarillo* to *Estebanillo Gonzalez*. The scholastic concept of woman and the characteristics of the feminine and masculine picaresque. The passivity of the *picaresque* and the primitive structure of the novels. A comparison of the Spanish picaresque with *Simplicissimus*, *Gil Blas*, and *Tom Jones*, with an inquiry into the concept of realism and the rise of the modern novel.

**455-456 Independent Study.** Credit four hours. Hours to be arranged. Staff.

**461 Utopias and Imaginary Voyages from the Renaissance to the Enlightenment.** Fall term. Credit four hours. M W F 1:25. Mr. Kennedy.  
Paradisical, utopian, and satiric visions of human society and human solitude with emphasis on European fiction between More and Voltaire (including works by Rabelais, Shakespeare, Cervantes, and Swift). Some consideration will be given to recurrent themes like the scientific transformation and educational stabilization of society, and to mythic components like the island, the forest, the city, and other worlds.

**[469 Dostoevsky, Mann, and Gide.** Fall term. Credit four hours. M W 2:30-4. Mr. Holdheim. Not offered in 1972-73.]

**471 Three Novelists: Stendhal, Dickens, and Mann.** Fall term. Credit four hours. W 2:30-4:25.  
Mr. Rosenberg.  
The realistic tradition in European fiction to 1910. A discussion of six or seven major European novels, including types of the historical novel, the family chronicle, and the *Bildungsroman*. Readings will include *The Charterhouse of Parma*, *Bleak House*, *Great Expectations*, *Buddenbrooks*, and Mann's major novellas.

**[472 Origins of the Avant-Garde.** Spring term. Credit four hours. Enrollment limited to 30 students. Prerequisite: consent of the instructor. M W F 2:30. Ms. Carden. Not offered in 1972-73.]

**480 The Late Eighteenth Century.** Spring term. Credit four hours. M W 10:10-12:05. Mr. Hertz.  
Readings in texts written between 1750 and 1800 in England and France, including poems (Blake and Smart),

philosophical prose (Hume and Rousseau), autobiography (Boswell and Rousseau), and fiction (Richardson and Laclos). A reading knowledge of French is required.

**481 Kierkegaard.** Fall term. Credit four hours. Th 2-4. Mr. Pedersen.

A discussion of a selection of works by Kierkegaard which are particularly interesting and problematic in a literary and critical tradition (*Either-Or*, *Repetition*, *Fear and Trembling*, *Stages on Life's Way*, and others). Throughout the course Kierkegaard will be considered in a literary and philosophical context which will emphasize his position in the writing tradition, his Danish biographical and literary background, his "effect" on later authors, and finally his position for a contemporary theory of writing and existence.

**492B Fiction and the Irrational (Also English 492B).** Spring term. Credit four hours. T Th 1:25-3:20.  
Mr. Rosenberg.

Intensive study of six or seven novels and novellas, including Dostoevsky's *The Devils*, Tolstoy's *Kreutzer Sonata*, Flaubert's *Madame Bovary*, De Quincey's *Confessions of an English Opium Eater*, and Mann's *Death in Venice*. Short papers and reports.

**Seminar: Ancient Israel's Theory of Literature (Semitics 401)**

**Seminar: The Book of Ezekiel (Semitics 402)**

**The Modern German Novel in English Translation (German 413)**

**Friedrich Nietzsche in English Translation (German 414)**

**The Great Moments of German Literature (German 417-418)**

**[Modern Hebrew Literature (1750-1950). (Semitics 441-442).** Not offered in 1972-73.]

**501-502 Topics in Modern Literature.** Credit four hours a term. [501 Fall term only. Not offered in 1972-73.]  
502 Spring term only. T 2-4. Mr. Pedersen.  
Topic for 1973: Modern Critical Problems.

**[552 The Historical Novel.** Spring term. Credit four hours. Th 2-4. Mr. Holdheim. Not offered in 1972-73.]

**639-640 Special Topics in Medieval Studies.**

Throughout the year. Credit four hours. Hours to be arranged. Staff.

## Computer Science

Mr. G. Salton, Chairman; Messrs. J. R. Bunch, R. L. Constable, R. W. Conway, J. E. Dennis, Jr., D. Gries, J. Hartmanis, J. E. Hopcroft, E. Horowitz, W. L. Maxwell, J. Moré, C. Pottle, R. E. Tarjan, R. J. Walker, J. H. Williams.

At Cornell, computer science is concerned with fundamental knowledge in automata, computability, and programming languages and systems programming, as well as with subjects such as numerical analysis and information processing which underlie broad areas of computer applications. Because of the wide implications of research in the field, the Department of Computer Science is organized as an intercollege department in the College of Arts and Sciences and the College of Engineering.

Even though there is as yet no formal undergraduate major in computer science, the Department offers a comprehensive set of undergraduate and graduate courses from which students can select the appropriate sequences to fit their major interests or to major in computer science through the Independent Majors Program. Students interested in a one-course survey of computers and their application should take 201. Course 202 is a

foundations course in computers and programming which leads to more advanced courses in computer science. Course 311 is intended for students whose sole interest is in learning a high level language, such as FORTRAN IV or PL/I.

Students who intend to have a strong minor in computer science should take the following courses: 202, 203, and/or 385, 222, 401, 409 and/or 411. An Independent Majors Program in computer science should include: 202, 203, 222, 385, 401, 409 and possibly one pair of the following: 411-412, 421-422, 485-486 or 411-435, which concentrate respectively on programming languages and systems, numerical analysis, theory of computation and information processing.

The students at Cornell are urged to take as many computer science courses as possible to acquaint themselves with this new science and prepare themselves to use it in their fields of study. Members of the Department are available to discuss with students the appropriate courses for their levels of ability and interest.

**201 Survey of Computer Science.** Fall term. Credit three hours. M W F 9:05.

Introduction to the structure and use of the modern computer. Intended to be an overview of the material, and emphasis is on nonnumeric computer applications, such as information retrieval, language processing, and artificial intelligence. A limited introduction to programming in a problem-oriented language is included.

**202 Computers and Programming.** Either term. Credit three hours. Prerequisite: some programming experience in algebraic language. M W 9:05 or T Th 10:10. Laboratory, M T W Th or F 2:30-4:25.

Intended as a foundations course in computer programming. Algorithms and their relation to computers and programs. Analysis of algorithms in terms of space and time requirements. A procedure-oriented language: specification of syntax and semantics, data types and structures, statement types, input-output, program structure. A brief introduction to machine organization. Programming and debugging problems on a computer are an essential part of this course.

**203 Discrete Structures.** Fall term. Credit three hours. Prerequisite: 201 or 202, M W F 1:25.

Fundamental mathematical concepts relevant to computer science. Set algebra, mappings, relations, partial ordering, equivalence relations, congruences. Operations on a set, groups, semigroups, rings and lattices, isomorphism and homomorphism, applications to automata and formal languages. Boolean algebra, applications to switching theory and decision tables. Directed and undirected graphs, subgraphs, chains, circuits, paths, cycles, graph isomorphism, application to syntactic analysis, and computer program analysis.

**222 An Introduction to Numerical Analysis.** Spring term. Credit three hours. Prerequisites: Grade B or better in Mathematics 122, and Computer Science 202 or 311 or consent of the instructor. M W F 1:25.

The course will provide a leisurely paced yet rigorous introduction to a subfield of numerical analysis. The lectures are intended to provide motivation for the study of the chosen topic rather than merely survey the known results in that area. Examples of possible topics are: approximation theory, solutions of ill-conditioned linear problems, numerical solutions of differential equations, quadrature theory, roots of nonlinear equations.

**311 Introduction to Computer Programming.** Either term. Credit two hours. T Th 11:15.

Notations for describing algorithms, analysis of computational problems. Applications of the (FORTRAN IV, PL/I) programming language to solve simple numerical and nonnumerical problems using a digital computer.

**385 Introduction to Automata Theory.** Spring term. Credit three hours. Prerequisite: 203 or Mathematics 222 or 294. T Th 10:10.

Models of abstract computing devices. Finite automata and regular expressions and sets. Input-output experiments, nondeterministic machines, parallel and sequential realizations, and algebraic structure theory. Pushdown automata and context-free languages. Closure properties and decision problems. Turing machines and recursively enumerable sets. Universal Turing machines, the halting problem, decidability.

**401 Introduction to Computer Systems and Organization.** Either term. Credit four hours. Prerequisite: 202, 311, or equivalent programming experience. T Th 11:15. Laboratory, M T W Th or F 2:30-4:25.

Characteristics and structure of digital computers as hardware units. Representation of data, addressing of data, index registers, indirect and base-plus-displacement addressing. Codes for error detection and corrections. Introduction to computer microstructure, gates, flip-flops, adders. Storage and peripheral hardware and their characteristics, the input-output channel, interrupts. Assembly language programming: format and basic instructions, the assembly process, loops and indexing, data types, subroutines, macros. Brief description of operating systems, loaders, interpreters, and compilers. Programming and debugging assembly language programs on a computer are an essential part of this course.

**404 Advanced Computer Programming.** Spring term. Credit four hours. Prerequisite: 401 or consent of the instructor. T Th 1:25, F 2:30.

Intended for students who wish to learn computer programming for eventual use in professional systems programming or advanced applications. To develop this ability, the basic logical and physical structure of digital computers is considered, and the applicability and limitations of this structure are studied through many examples and exercises. The approach, therefore, is not a theoretical one, but rather an engineering one, in which techniques are emphasized. The students are expected to participate in a large systems programming design and implementation effort.

**409 Data Structures.** Fall term. Credit four hours.

Prerequisite: 401 or the equivalent. T Th 9:05, W 2:30. Data structures, relations between data elements, and operations upon data structures. Bits, bytes, fields, arrays, stacks, trees, graphs, lists, strings, records, files, and other forms of data structures. Primitive operations accessing techniques, and storage management techniques appropriate to each class of data structures. Sorting and searching techniques, symbol table structures. Data structures in programming languages, retrieval systems, and data management systems. Formal specification of classes of information structures.

**411 Programming Languages.** Fall term. Credit four hours. Prerequisite: 401 or consent of the instructor. M W F 1:25.

An introduction to the structure of programming languages. Specification of syntax and semantics. Properties of algorithmic, list processing, string manipulation, and simulation languages: basic data types and structures, operations on data, statement types, and program structure. Macrolanguages and their implementation. Run-time representation of programs and data. Storage management techniques.

**412 Translator Writing.** Spring term. Credit four hours. Prerequisite 411 or consent of the instructor. M W F 1:25.

Discussion of the models and techniques used in the design and implementation of assemblers, interpreters, and compilers. Topics include lexical analysis in translators, compilation of arithmetic expressions and simple statements, specification of syntax, algorithms for

syntactic analysis, code generation and optimization techniques, bootstrapping methods, compiler-compiler systems.

#### **413 Systems Programming and Operating Systems.**

Fall term. Credit four hours. Prerequisite: 409 or consent of the instructor. M W F 1:25.

The organization and software components of modern operating systems. Batch processing systems: loaders, input-output methods. Cooperating sequential processes: parallel programming, synchronization techniques. Introduction to multiprogrammed systems: the "process" model, virtual machines. Storage management: relocation, protection, allocation. Procedure and data sharing. Process scheduling and control. General resource management. File systems: logical and physical organization, protection. Case studies. Additional topics such as systems simulation, job control languages, and micro-programming. Projects involving the design and implementation of systems modules.

#### **415 Machine Organization.** Spring term. Credit four hours. Prerequisite: 401 or consent of the instructor. M W F 2:30.

The design and functional organization of digital computers. Boolean algebra, elements of logical design, and computer components. Counters, shift registers, half and full adders, design of arithmetic units. Memory components, accessing and retrieval techniques, addressing structures, realization of indexing, and indirect addressing. Control unit structure, instruction decoding, synchronous and asynchronous control. Input-output channels, buffering, auxiliary memory structure, interrupt structures. Overall system organization, reliability, system diagnostics, system simulation.

#### **416 Operations Research Models for Computer and Programming Systems.** Spring term. Credit four hours.

Prerequisites: 411 and a course in probability (e.g., Mathematics 371 or Engineering 9460), or consent of the instructor. T Th 10:10, occasionally W 2:30.

Modeling and analysis of computer hardware and software systems. Some applications of the theories and techniques of operations research to problems arising in computer systems design and programming. Operating systems design: resource allocation and scheduling. Queuing models for time-sharing and multiprogramming systems. Reliability of computer systems and computer networks. Statistical techniques for measuring systems performance. Simulation of hardware and software; systems balancing. Applications of stochastic processes and inventory theory, e.g., file organization and management, models of computer center operation. Mathematical programming techniques applied to hardware configuration selection. Students will be expected to program and analyze a model which can be applied to a problem of hardware or software design.

#### **420 Computer Applications of Numerical Analysis.** Fall term. Credit four hours. Prerequisites: Mathematics 222 or 294 and Computer Science 311 or equivalent programming experience. M W F 10:10.

Modern computational algorithms for the numerical solution of a variety of applied mathematics problems are presented, and students solve current representative problems by programming each of these algorithms to be run on the computer. Topics include numerical algorithms for the solution of linear systems; finding determinants, inverses, eigenvalues and eigenvectors of matrices; solution of a single polynomial or transcendental equation in one unknown; solution of systems of nonlinear equations; acceleration of convergence; Lagrangian interpolation and least squares approximation for functions given by a discrete data set; differentiation and integration; solution of ordinary differential equations: initial value problems for systems of nonlinear first order differential equations, two-point boundary value problems; partial differential

equations: finite difference grid technique for the solution of the Poisson equation. Computer Science graduate students are urged to take 421-422.

#### **421-422 Numerical Analysis.** Throughout the year. Credit four hours a term. Prerequisite: Mathematics 412 or 416 or 422 or consent of the instructor. M W F 9:05. Laboratory, one hour per week to be arranged.

A mathematical analysis of numerical methods from the areas of solution of linear systems of equations, matrix inversion, eigenvalue and eigenvector determination, non-linear equations, polynomial approximation, interpolation, differentiation, integration, ordinary and partial differential equations. Practical experience will be gained in the laboratory.

#### **435 Information Organization and Retrieval.** Spring term. Credit four hours. Prerequisite: 401 or the equivalent. T Th 9:05, occasionally, W 2:30.

Covers all aspects of automatic language processing on digital computers, with emphasis on applications to information retrieval. Analysis of information content by statistical, syntactic, and logical methods. Dictionary techniques. Automatic retrieval systems, question-answering systems. Evaluation of retrieval effectiveness.

#### **441 Mathematical Symbol Manipulation.** Spring term. Credit four hours. Prerequisites: 409 and some knowledge of discrete mathematics, e.g., 203, 485 or Mathematics 431. To be arranged.

This course deals with arithmetic and algebraic algorithms and their implementation in a generalized computer system. The emphasis will be on symbolic rather than numeric techniques for solutions to the problems. For each algorithm computing times will be derived and analyzed. Among the topics to be covered will be infinite precision integer arithmetic, modular arithmetic, operations on multivariate polynomials and rational functions, such as symbolic integration and exact factorization over several fields, and exact solution of linear systems.

#### **485 Theory of Automata I.** Fall term. Credit four hours. Prerequisites: 203 and 401, or Mathematics 222 and some programming experience, or consent of instructor. M W F 11:15.

Automata theory is the study of abstract models of computation, both computing devices and algorithmic languages; their classification, structure and computational power. Topics include finite state automata, regular expressions, decompositions of finite automata, Turing machines, random access machines and their abstract programming languages, halting problems, undecidability, universality, and Church's thesis.

#### **486 Theory of Automata II.** Spring term. Credit four hours. Prerequisite: 485 or consent of the instructor. M W F 11:15.

Topics include context-free and context-sensitive languages and their relation to push-down and linearly bounded automata. Quantitative aspects of Turing machine computations: time- and memory-bounded computations with applications to language processing and classification of other automata and computations. Axiomatic theory of computational complexity.

#### **487 Formal Languages.** Fall term. Credit four hours. Prerequisite: 486 or consent of the instructor. M W F 2:30.

A study of formal languages, their processing, and processors. Topics include regular, context-free and context-sensitive languages: their recognition, parsing, algebraic properties, decision problems, recognition devices, and applications to computer and natural languages.

#### **488 Theory of Effective Computability.** Spring term. Credit four hours. Prerequisites: 401, 485, Mathematics 481 or consent of the instructor. T Th 10:10.

Notion of an effective process; Church's Thesis, and constructive mathematics; abstract models of computation,



Turing machines; random access machines; algorithmic unsolvability; halting problems; equivalence problems; relative computability; Post's problem; degrees of unsolvability; the Kleene arithmetic hierarchy; productive, creative, and immune sets; computational complexity and subrecursive hierarchies.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate field representative.

**517 Picture Processing.** Spring term. Credit four hours. Prerequisite: 411 or consent of the instructor. T Th 10:10.

**521 Solutions of Nonlinear Equations and Nonlinear Optimization Problems.** Spring term. Credit four hours. Prerequisite: 422 or consent of the instructor. M W F 10:10.

**523 Numerical Solution of Ordinary Differential Equations and Integral Equations.** Fall term. Credit four hours. Prerequisite: 422 or consent of the instructor. M W F 10:10.

**525 Numerical Solution of Partial Differential Equations.** Spring term. Credit four hours. Prerequisite: 523 or consent of the instructor. M W F 10:10.

**527 Introduction to Approximation Theory.** Fall term. Credit four hours. Prerequisite: 422 or consent of the instructor. M W F 10:10.

**587 Computational Complexity.** Fall term. Credit four hours. Prerequisite: 486 or 488 or consent of the instructor. T Th 9:05.

**589 Theory of Algorithms.** Fall term. Credit four hours. Prerequisite: 409 or 486. Hours to be arranged.

**590 Special Investigations in Computer Science.** Either term. Prerequisite: consent of the registration officer of the department. Hours to be arranged.

**591 Computer Science Graduate Seminar.** Either term. Credit one hour. Primarily for graduate students. Th 4:30–6. Staff, visitors, and students.

**611 Seminar in Programming.** Either term. Credit four hours. Prerequisite: 411 or consent of the instructor.

**621 Seminar in Numerical Analysis.** Either term. Credit four hours. Prerequisite: consent of the instructor.

**635 Seminar in Information Organization and Retrieval.** Either term. Credit four hours. Prerequisite: 435.

**681 Seminar in Automata Theory.** Either term. Credit four hours. Prerequisite: 486 or consent of the instructor.

**Digital Systems Simulation (Industrial Engineering 9580, College of Engineering).**

**Data Processing Systems (Industrial Engineering 9382, College of Engineering).**

**Switching Systems I (Electrical Engineering 4487, College of Engineering).**

**Switching Systems II (Electrical Engineering 4488, College of Engineering).**

## Economics

Mr. T. C. Liu, Chairman; Messrs. G. P. Adams, Jr., E. A. Blackstone, E. T. Burton, III, N. R. Chen, M. G. Clark, T. E. Davis, R. Engle, W. D. Evans, H. Fleisig, W. Galenson, F. H. Golay, G. H. Hildebrand, P. M. Hohenberg, J. G. B. Hutchins, W. Isard, A. E. Kahn, P. Miovic, D. C. Mueller, P. Pestieau, U. Possen, G. J. Staller, S. C. Tsiang, J. Vanek, H. Y. Wan, Jr.

Students wishing to major in economics must have completed Economics 101–102 or its equivalent with an average of C or better. Students who have completed

only one semester of the introductory course may be accepted as provisional majors provided their grade was at least C. Prospective majors should report to the Department of Economics office.

The requirements for a major are: (1) Economics 311 and 312; (2) twenty hours of other economics courses listed by the Department of Economics in this *Announcement*, except that, with the permission of the major adviser, two other economics courses outside the College of Arts and Sciences may be used in fulfillment of this requirement; and (3) three courses above the introductory level in subjects related to economics, selected with the approval of the major adviser from the offerings of the Departments of Anthropology, Asian Studies, Government, History, Mathematics, Philosophy, Psychology, and Sociology, and of the Center for International Studies.

In addition to the courses required for the major, many students will find it valuable to take introductory accounting (Business and Public Administration 112S) and statistics (the diverse possibilities include Agricultural Economics 310, Industrial and Labor Relations 210, Industrial Engineering 9170 and 9360–9370, and Mathematics 370 and 371–472–473). Mathematics courses are not needed for an undergraduate major. However, students planning graduate work in economics are strongly advised to take mathematics at least through calculus and linear algebra.

## The Honors Program

Candidates for the degree of Bachelor of Arts with Honors in Economics will enroll in the Honors seminars 390, 391, and 392. Honors candidates are expected to complete thirty-two hours of advanced courses in economics, including the Honors seminars and all courses required of majors.

Students seeking admission to the Honors program should consult their advisers and the professor in charge of the program not later than the preregistration period in the fall of their junior year. Application will not normally be considered from students whose cumulative average is less than B— in both their general studies and their economics courses.

A comprehensive Honors examination, both written and oral, will be given to Honors candidates at the end of their senior year. Honors candidates may be exempted from final examinations in their other economics courses at the end of their senior year.

The Honors seminars 390 and 391 may be taken, with permission, by students not in the Honors program courses required of majors.

## Distribution Requirement

The Distribution requirement in social sciences is satisfied in economics by Economics 101–102.

**101 Introductory Economics.** Either term. Credit three hours. Large lectures, plus two additional discussion sections (scheduled throughout the week), or independent sections each of which meets three times a week with the same instructor. Fall term: Large lectures, M W 9:05, T Th 9:05, 11:15, Messrs. Burton, Galenson, staff and assistants. Independent sections, M W F 9:05, 10:10, 11:15, 12:20. T Th S 10:10, 11:15, T Th 1:25–2:40, 3:10–4:25. Spring term: Large lecture, T Th 9:05. Mr. Staller and assistants. Independent sections, M W F 10:10, 12:20. Centers on the determinants of aggregate economic activity. The main areas studied are the monetary and banking systems, the composition and fluctuations of national income, and the major conditions of economic growth, all as influenced by monetary, fiscal, and other policies.

**102 Introductory Economics.** Either term. Credit three hours. Large lectures, plus two additional discussion sections (scheduled throughout the week), or independent sections each of which meets three times a week with the same instructor. Fall term: Large lecture M W 9:05, Mr. Adams and assistants. Independent sections M W F 10:10, 12:20. Spring term: Large lectures, M W 9:05, 11:15, T Th 11:15. Messrs. Hildebrand, Hohenberg, Liu, and assistants. Independent sections, M W F 9:05, 10:10, 11:15, 12:20, T Th S 10:10, 11:15, T Th 1:25–2:40, 3:10–4:25. A survey of the existing economic order, with particular emphasis on the salient characteristics of the modern American economy. Concentration is on explaining and evaluating the operation of the price system as it regulates production, distribution, and consumption, and as it is, in turn, modified and influenced by private organization and government policy.

## General Courses

**301 Economics of Market Failure.** Fall term. Credit four hours. Prerequisite: Economics 102. T Th 10:10 and third session to be arranged. Mr. Hohenberg. A study of the general situations in which the price system fails to achieve an optimal allocation of goods and services. The main kinds of market failures examined include externalities, joint supply, and public goods. A number of specific kinds of market failures will be examined in detail. These may include pollution, education, conservation, congestion, population, etc.

**302 The Impact and Control of Technological Change.** Spring term. Credit four hours. T Th 2:30–4:00. Visiting speakers. Sections to be arranged. Mr. Mueller, Mrs. Nelkin. The course examines social, environmental, and economic implications of technological change in the United States in the context of possible policies and strategies of control. Several specific cases will be considered in detail followed by a broader investigation of the problems of a modern technological society. Alternative political-economic solutions will be explored. The course is interdisciplinary and relies on weekly guest speakers. Students will participate in a research project to develop a case study.

**309 Capitalism and Socialism.** Fall term. Credit four hours. Prerequisite: 101–102. M W 1:25–2:40. Mr. Hildebrand. Capitalism as a type of economic organization and as an idea system. Smith's view and Marx's critique. The achievements of capitalism. Some current issues: stability, inflation, monopoly, distribution, costs of growth. Socialist criticisms. Types of socialist thought. Some problems of socialism: the place of the state and the question of scarcity. Central planning. Recent appraisals of capitalism and socialism: Durbin, Crosland, Schumpeter, von Mises, Sweezy, Pigou, Pareto, Wilson, Galbraith, Friedman, Wright, and others.

**311 Intermediate Microeconomic Theory.** Either term. Credit four hours. Required of all students majoring in economics. Prerequisite: 101–102 or consent of the instructor. Fall term: M W F 9:05, 10:10, 11:15, T Th 1:25–2:40. Messrs. Chen, Miovic, Pestieau, and Wan. Spring term: M W F 10:10, T Th S 11:15. Mr. Wan and Staff. Analysis of the pricing processes in a private enterprise economy under varying competitive conditions, their role in the allocation of resources, and the functional distribution of national income.

**312 Intermediate Macroeconomic Theory.** Either term. Credit four hours. Required of all students majoring in economics. Prerequisite: Economics 101–102 or consent of the instructor. Fall term: M W F 11:15, T Th 1:25–2:40, Staff. Spring term: M W F 9:05, 10:10, 11:15, T Th S 10:10. Messrs. Burton, Chen, and Staff. An introduction to the theory of national income determination and economic growth in alternative models of the

national economy; the interaction and relation aspects of these models of empirical aggregate economic analysis.

**315 History of Economic Thought.** Fall term. Credit four hours. W 2:30–4:20. Mr. Adams. A survey of the development of economic thought from the early modern period to the early twentieth century. Emphasis is placed, although not exclusively on English classical economic thought, but attention is paid to divergent and dissident schools. This course usually terminates with Alfred Marshall. Students have the option of writing a term paper on an approved topic or of taking the final examination.

**317 Intermediate Mathematical Economics I.** Fall term. Credit four hours. Prerequisite: Economics 101–102 or the equivalent. M W 1:25–2:40. Mr. Evans. Discussion of economic subjects will include economic models, static or equilibrium analysis, comparative-static analysis, optimization of objective functions subject to constraints, and production functions. Mathematical topics discussed will include functional dependence, set theory, linear models and matrix algebra, derivatives and differentiation, partial derivatives, differentials, tests for extreme values, maxima and minima subjects to constraints, and homogeneous functions. No prior acquaintance with these mathematical topics is required.

**318 Intermediate Mathematical Economics II.** Spring term. Credit four hours. Prerequisite: Economics 317 or a course in the differential calculus. M W 1:25–2:40. Mr. Evans.

Economic subjects discussed will include Domar and Solow growth models, the Domar debt model, cobweb models, the Samuelson multiplier-accelerator model, dynamic input models, and linear programming models and their duals. Mathematical topics discussed will include integration, differential equations, simultaneous equation models, linear programming and game theory.

**319–320 Quantitative Methods.** Throughout the year. Credit four hours a term. Prerequisite: good control of micro- and macroeconomic theory and some very elementary knowledge of calculus, linear algebra, and probability; or consent of the instructor. Fall and spring terms: T Th 12:20–2:00. Mr. Miovic.

The application of quantitative analysis to the testing of economic theories, largely at the macroeconomic level. This framework will provide a basis for study and evaluation of cross-section and time-series data, methodology and theory of economic measurement, statistical techniques, empirical studies and economic forecasting.

## Economic History

**[321 Economic History of Ancient Medieval Europe.** Fall term. Credit four hours. Given in alternate years. Open to upperclassmen with some background in economics or history, or with consent of the instructor. Not offered 1972–73.]

**322 Economic History of Modern Europe.** Spring term. Credit four hours. Prerequisite: same as for 321. M W F 10:10. Mr. Hohenberg. An analysis of economic change in Europe, with emphasis on the period since the mideighteenth century.

**[323 American Economic History.** Fall term. Credit four hours. Prerequisite: Economics 101–102, or consent of the instructor. Not offered 1972–73.]

**[324 American Economic History.** Spring term. Credit four hours. Prerequisite: Same as for 323. Not offered 1972–73.]

**325 Economic History of Latin America.** Fall term. Credit four hours. Open to upperclassmen with some background in economics or history, or with the consent of the instructor. M W F 10:10. Mr. Davis.

A survey emphasizing the processes and problems of economic growth and the evolution of economic institutions.

**327 The Environment of Economic Activity in Postwar Europe.** Fall term. Credit four hours. Prerequisite: Economics 101-102 or the equivalent. Time to be arranged. Mr. Hohenberg.

Economic growth and change in postwar Europe, with special emphasis on the business system and the role of the state. Topics taken up will include the sources of economic growth, the role of management, labor, and consumers, planning versus competition, integration and trade liberalization, the impact of the U.S. and regional development. Concentration on Western Europe.

**[329 Economic History of Early Modern Europe.** Spring term. Credit four hours. Prerequisite: open to upperclassmen with some background in economics or history, or with consent of the instructor. Not offered 1972-73.]

**Economic and Business History (Business and Public Administration 375).** Fall term. Credit three hours. Limited to seniors who have completed 101-102. M W F 9:05. Mr. Hutchins.

A study of the evolution of economic organization and the role of the business firm therein. Although some attention is given to earlier times, the primary emphasis is on the period since 1750. The analysis of the development of business organization, administration, and policy proceeds in part by means of historical case studies. Attention is paid to the relations between business policies and the rise and fall of firms and industries, and to the interactions of business and public policies. The primary focus is on the United States, but European origins and developments are included when significant.

## Money, Banking, and Public Finance

**331 Money and Credit.** Fall term. Credit four hours. Prerequisite: Economics 101-102. T Th S 9:05. Mr. Possen. A systematic treatment of the determinants of the money supply and the volume of credit. Economic analysis of credit markets and financial institutions in the United States.

**335 Public Finance: Resource Allocation.** Fall term. Credit four hours. Prerequisite: Economics 101-102. M W F 11:15. Mr. Blackstone. Analysis of the role of government in allocating resources through taxes and expenditures. Criteria for evaluation will be developed and applied to specific policies. Attention will focus on the federal government.

**338 Macroeconomic Policy.** Spring term. Credit four hours. Prerequisite: Economics 312. M W F 9:05. Mr. Possen.

A study of the use of fiscal and monetary policies for achieving full employment, price level stability, and appropriate economic growth.

## Labor Economics

**Economics of Wages and Employment (Industrial and Labor Relations 241).** Either term. Credit three hours. Prerequisite: Economics 101-102 or equivalent. Fall term: M W F 11:15. Mr. Raimon. Spring term: M W F 10:10, 11:15, 2:30. Messrs. Hildebrand, Perl, and Raimon. An introduction to the characteristics of the labor market and to analysis of wage and employment problems. Among topics studied are the composition of the labor force, job-seeking and employment practices, methods of wage determinations, theories of wages and employment, economic effects of unions, the nature and causes of unemployment, and programs to combat joblessness and poverty.

**342 Economics and Problems of Labor.** Spring term. Credit four hours. Prerequisite: Economics 101-102.

I&LR 241 recommended. M W 1:25-2:40. Mr. Hildebrand. An advanced course concerning the institutional organization of labor markets, economic analysis of their operation, and major policy questions involved. Principal topics include wage and employment theory; determinants of wage level and structure; technological change; unemployment; poverty and income distribution; inflation and incomes policy.

## Organization, Performance, and Control of Industry

**351 Industrial Organization.** Fall term. Credit four hours. Prerequisite: Economics 101-102. M W F 9:05. Mr. Blackstone.

An analysis of the prevalence and effectiveness of competition in the American economy centering on the structure, conduct, and performance of American industry. Structural characteristics to be discussed include concentration, economics of scale, product differentiation, and barriers to entry. Among the numerous aspects of business behavior to be examined will be merger decisions, pricing, advertising, and technological innovation policies. A number of case studies of American industries and firms will be read, and emphasis will be placed on relating the theories of monopoly, oligopoly, and competition to the histories of specific firms and industries.

**352 Public Regulation of Business.** Spring term. Credit four hours. Prerequisite: Economics 351 or consent of the instructor. M W F 9:05. Mr. Blackstone.

A continuation of Economics 351, concentrating mainly on public policies of enforcing, supplementing, or replacing competition, with specific studies of selected industries and recent legal cases.

**354 Economics of Regulation.** Spring term. Credit four hours. Mr. Kahn. Hours to be arranged.

A study of the economics of direct regulation of industry. The course will concentrate on the traditional public utility industries (electricity, gas, communications, and transportation) and will draw on regulatory experience in competitive industries where relevant. Concentration will be on the application of economic principles to common problems of regulation with equal emphasis on institutional problems—the characteristics and problems of the regulatory process itself, the proper role and definition of competition—and recognition throughout of the necessity for reconciling economic and noneconomic goals. Among topics covered the proper rate level, principles of rate termination, rate making in competitive situations, limitations on entry and independent price making, regulation of quality of services, integration of public utility companies and systems, public enterprise, and the accommodation to technological change.

**Transportation: Rates and Regulations (Business and Public Administration 575).** Fall term. Credit three hours. Limited to seniors who have taken Economics 101-102 or the equivalent. M W F 10:10. Mr. Hutchins.

A study of American transportation focused on economic organization, public policy, and the rate-making process. The emphasis is on the theory and practice of rate making in an environment complicated by fixed, joint, and common costs, by competition among differing modes of transport, and by complex patterns of regulation.

**Transportation: Organization, Administration, and Public Policies (Business and Public Administration 576).** Spring term. Credit three hours. Limited to seniors who have completed Economics 101-102. M W F 10:10. Mr. Hutchins. A continuation of B&PA 575 dealing with problems of organization, administration, and public policy in the various segments of transportation—merchant shipping, air transport, motor carrier transport, domestic water transport, and railroad reorganization. Cases are used to bring out some of the problems.

## International and Comparative Economics

**361 International Trade Theory and Policy.** Fall term. Credit four hours. Prerequisite: Economics 101–102 or consent of instructor. M W F 11:15. Staff. Survey of the principles that have served as guides in the formulation of international trade and commercial policies. The evolution of the theory of international trade, principles and practices of commercial policy, problems of regional integration and customs unions, and institutions and practices of state trading will be emphasized.

**362 International Monetary Theory and Policy.** Spring term. Credit four hours. Prerequisite: Economics 101–102 or consent of the instructor. M W F 11:15. Staff. Survey of the principles that have served as guides in the formulation of international financial policies. The evolution of the theory of balance of payments adjustment, international monetary standards, the nature of conflicts arising out of the relationship between domestic economic policies and external economic relations, international capital movements, economic aid, international monetary institutions, and proposals for international monetary reforms will be emphasized.

**364 The United States in the World Economy.** Fall term. Credit four hours. Prerequisite: Economics 101–102 or consent of instructor. Not offered in 1972–73.]

**365 Economic Policy and Development in Southeast Asia.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Not offered in 1972–73.]

**367 Comparative Economic Systems: Soviet Union and Europe.** Fall term. Credit four hours. Prerequisites: Economics 101–102 and Industrial and Labor Relations 445 or consent of the instructor. M W F 9:05. Mr. Staller. Discussion of the rationality and feasibility of economic planning (von Mises, Hayek, Lange). Examination of the various approaches to planning, including discussion of the planning techniques in France, Yugoslavia, and the Soviet Union (with emphasis on the Soviet Union). Comparison of economic performance of various free and planned economies. Consideration of economic competition between the free and the planned systems.

**368 Contemporary Brazil (Also Sociology 368).** Spring term. Credit four hours. Prerequisite: two courses in the social science. Offered in alternate years. Not offered 1972–73.]

**369 Introduction to the Economy of China.** Fall term. Credit four hours. Prerequisite: consent of the instructor. M W F 11:15. Mr. Chen.

A survey of modern Chinese economic development with special emphasis on the policies, performance, and problems of the mainland economy since 1949.

**Comparative Economic Systems: Soviet Russia (Industrial and Labor Relations 445).** Spring term. Credit four hours. Prerequisite: Economics 101–102 or consent of the instructor. To be arranged. Mr. Clark.

A comparative analysis of the principles, structure, and performance of the economy of Soviet Russia. Special attention will be devoted to industry and labor, and to the international impact of Soviet economic development.

## Economic Growth and Development

**371 Public Policy and Economic Development.** Fall term. Credit four hours. Prerequisite: Economics 101–102 or consent of the instructor. M W F 9:05. Mr. Golay. Survey of colonial policy and development and current processes of economic growth in less developed countries. Examination of the role of the state in capital formation, agricultural development, monetary management, and economic planning. Interaction of cultural and techno-

logical change, the role of international specialization, and the potential for outside participation in national economic development are emphasized.

**372 Processes of Economic Growth and Development.** Spring term. Credit four hours. Prerequisite: Economics 101–102 or consent of the instructor. Hours to be arranged. Staff.

A consideration of various contributions by economists and others to an understanding of how societies undergo economic growth and institutional change. Developing countries are the main focus of attention. Some possibilities of combining elements from economics and other fields to form a broad approach to economic development are explored.

**382 Economics of Workers' Management in Yugoslavia.** Spring term. Credit four hours. Prerequisite: Economics 311–312 or consent of the instructor. T Th 3:00–4:30. Mr. Miovic.

This course examines the worker-managed economy of Yugoslavia. The organization and theoretical and practical implications of worker management will be studied in detail. Special attention will be given to the outcome of the decision-making process at the firm level of such a system, the consistency of these outcomes with the national plans, and the policies used to implement them.

## Honors Program

**390 Honors Seminar.** Spring term. Credit four hours. Required of all juniors who plan to be candidates for Honors, and open to any qualified student who may be interested with no obligation to continue with 391. W 2:30. Mr. Adams.

Selected readings from books which have been significant in the development of economics.

**391 Honors Seminar.** Fall term. Credit four hours. Required of all seniors who are candidates for Honors, and open to any qualified student who may be interested with no obligation to continue with 392. M 2:30. Mr. Adams. Continuation of Economics 390.

**392 Honors Seminar.** Spring term. Credit four hours. Required of all seniors who are candidates for Honors. M 2:30. Mr. Adams. Continuation of 391 with the writing of an Honors thesis and preparation for the comprehensive Honors examination.

**399 Readings in Economics.** Throughout the year. Variable credit. Any member of the Department.

## Graduate Courses and Seminars

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

**509 The Theory of Household and the Firm.** Fall term. Credit four hours. M W F 11:15. Staff.

**510 The Theory of Markets and General Equilibrium.** Spring term. Credit four hours. M W F 10:10. Staff.

**511 Microeconomic Theory.** Fall term. Credit four hours. M W F 9:05. Staff.

**512 Macroeconomic Theory.** Spring term. Credit four hours. M W F 11:15. Staff.

**513 Macroeconomic Theory: Static Income Determination.** Fall term. Credit four hours. T Th S 11:15. Staff.

**514 Macroeconomic Theory: Dynamic Models, Growth, and Inflation.** Spring term. Credit four hours. T Th S 10:10. Staff.

**517–518 Intermediate Mathematical Economics.** Throughout the year. Credit four hours. M W 1:25–2:40. Mr. Evans.



**519-520 Quantitative Methods.** Throughout the year. Credit four hours. T Th 12:20-2:00. Mr. Miovic.

**[521 European Economic History.** Fall term. Credit four hours. M W F 10:10. Not offered 1972-73.]

**522 European Economic History.** Spring term. Credit four hours. M W F 10:10. Mr. Hohenberg.

**[523-524 American Economic History.** Throughout the year. Credit four hours. Not offered 1972-73.]

**525 Economic History of Latin America.** Fall term. Credit four hours. M W F 10:10. Mr. Davis.

**527 The Environment of Economic Activity in Postwar Europe (Also Business and Public Administration 635).** Fall term. Credit four hours. Mr. Hohenberg.

**[529 Economic History of Early Modern Europe.** Spring term. Credit four hours. Not offered 1972-73.]

**551 Industrial Organization.** Fall term. Credit four hours. M W F 9:05. Mr. Blackstone.

**552 Public Regulation of Business.** Spring term. Credit four hours. M W F 9:05. Mr. Blackstone.

**561-562 International Economic Theory and Policy.** Throughout the year. Credit four hours. M W F 11:15. Staff.

**565 Economic Problems of Latin America.** Spring term. Credit four hours. Hours to be arranged. Mr. Davis.

**571 Public Policy and Economic Development.** Fall term. Credit four hours. Prerequisite: Economics 101-102 or consent of the instructor. M W F 9:05. Mr. Golay.

**572 Processes of Economic Growth and Development.** Spring term. Credit four hours. Hours to be arranged. Staff.

**582 Economics of Workers' Management in Yugoslavia.** Spring term. Credit four hours. Th 3:00-4:30. Mr. Miovic.

**611 Advanced Microeconomic Theory.** Spring term. Credit four hours. Hours to be arranged. Mr. Wan.

**612 Advanced Macroeconomic Theory.** Fall term. Credit four hours. Hours to be arranged. Mr. Tsiang.

**613 History of Economic Thought.** Fall term. Credit four hours. W 2:30-4:20. Mr. Adams.

**617-618 Mathematical Economics.** Throughout the year. Credit four hours. Hours to be arranged. Staff.

**619-620 Econometrics.** Throughout the year. Credit four hours. Hours to be arranged. Staff.

**619A-620A Workshop in Econometrics.** Throughout the year. Credit four hours. Hours to be arranged. Mr. Liu.

**[621-622 Seminar in Economic History.** Throughout the year. Credit four hours. Not offered 1972-73.]

**[623-624 American Economic History.** Throughout the year. Credit four hours. Not offered in 1972-73.]

**631-632 Monetary Theory and Policy.** Throughout the year. Credit four hours. Hours to be arranged. Mr. Tsiang.

**635-636 Public Finance: Resource Allocation and Fiscal Policy.** Throughout the year. Credit four hours. Hours to be arranged. Mr. Pestieau.

**641-642 Labor Economics.** Throughout the year. Credit four hours. M 4:00-6:00. Messrs. Galenson and Hildebrand.

**651-652 Industrial Organization and Regulation.** Throughout the year. Credit four hours. Hours to be arranged. Fall term: Mr. Mueller. Spring term. Mr. Blackstone.

**[661-662 International Economics: Pure Theory and Policy.** Throughout the year. Credit four hours. Hours to be arranged. Not offered 1972-73.]

**663-664 International Economics: Balance of Payments and International Finance.** Throughout the year. Credit four hours. Hours to be arranged. Mr. Vanek.

**[666 Special Topics in International Finance.** Spring term. Credit four hours. Hours to be arranged. Not offered 1972-73.]

**[671-672 Economics of Development.** Throughout the year. Credit four hours. Not offered in 1972-73.]

**674 Economic Planning.** Spring term. Credit four hours. Hours to be arranged. Mr. Staller.

**675 Growth and Development.** Spring term. Credit four hours. Hours to be arranged. Mr. Burton.

**676 The Economy of China.** Spring term. Credit four hours. Hours to be arranged. Mr. Chen.

**[677 Topics in Economic Growth and Development.** Not offered in 1972-73.]

**678 Economic Growth in Southeast Asia.** Spring term. Credit four hours. Hours to be arranged. Mr. Golay.

**[679 Theory of Economic Development.** Not offered in 1972-73.]

**681 Economics of Participation and Labor-Managed Systems: Theory.** Fall term. Credit four hours. Hours to be arranged. Mr. Vanek.

**682 Economics of Participation and Labor-Managed Systems: Economic Policy and Planning.** Spring term. Credit four hours. Hours to be arranged. Mr. Vanek.

**Location Theory (Policy Planning and Regional Analysis 715, College of Architecture, Art, and Planning).** Fall term. Hours to be arranged. Mr. Isard.

**Methods of Regional Analysis (Policy Planning and Regional Analysis 733, College of Architecture, Art, and Planning.)** Spring term. Hours to be arranged. Mr. Isard.

## English

Mr. B. B. Adams, Chairman; Messrs. M. H. Abrams, A. R. Ammons, D. N. Archibald, J. P. Bishop, Mrs. Jean Blackall, Messrs. J. D. Boyd, M. R. Brownell, S. Budick, A. Caputi, M. J. Colacurcio, D. D. Eddy, R. H. Elias, S. B. Elledge, A. V. Ettin, R. T. Farrell, E. G. Fogel, P. A. Gottschalk, W. J. Harris, B. L. Hathaway, N. H. Hertz, T. D. Hill, R. D. Hume, C. K. Jorstad, R. E. Kaske, M. W. Kaufman, H. Kaye, C. S. Levy, P. L. Marcus, W. P. Matthews, D. E. McCall, J. R. McConkey, H. S. McMillin, Mrs. Dorothy Mermin, Messrs. J. B. Merod, F. E. Mineka, A. M. Mizener, Miss Susan Morgan, Messrs. D. Novarr, A. R. Parker, S. M. Parrish, S. Redding, E. Rosenberg, Miss Joanna Russ, Messrs. D. R. Schwarz, Mrs. Sandra Siegel, Messrs. W. J. Slatoff, B. O. States, S. C. Strout, W. Wetherbee.

Students who plan to major in English should secure from the Department's office, 245 Goldwin Smith, a brochure containing suggestions for prospective majors. All students who are candidates for the major in English and all who are considering the possibility of a major in English will be assigned, if they wish, to a major adviser in the second term of the freshman year. Such students should apply to the chairman of the Department in the ten-day period before registration. Early assignment to a major adviser commits neither the student nor the Department. A student is a provisional major until he has completed six hours of study in a foreign language (preferably in literature) in courses for which Qualification is a prerequisite and either English 251-252 or English 250 and 350. The foreign language courses must be completed before the senior year. English 251-252 should be completed by the end of the sophomore year; English 250 should be taken in the sophomore year, and English 350 in the junior year after a student has completed at least two English courses at the 200 level or higher. Applicants for the regular major

must have achieved grades of at least C in all courses in English during the first two years.

Majors take a minimum of eight courses in English, or in other subjects approved for the major, numbered 300 or higher, but students who elect to satisfy the prerequisite to the major with English 250 and 350 may not count English 350 as one of these eight. English 488 and 489 may not be used in satisfaction of the major.

The Department of English does not require specific upper-class courses, but it advises students to select courses in both the older and the more recent periods and to avoid over-concentration on a single genre. Courses at the 300 level (many of which are lectures) are, in the main, surveys of the major areas of English and American literature; they are open to sophomores who have completed English 250 or 251–252. Courses at the 400 level (most of which are discussions) are, in the main, more limited in focus and more specialized in content; discussion courses are restricted to about fifteen students, and seniors are given preference in electing them. Of the eight required courses, three may be upperclass courses in comparative literature, a foreign literature, or special courses such as those of the Society for the Humanities, provided that these alternatives are approved by the student's adviser as relevant to the major.

## The Honors Program

The Honors program differs from the regular major primarily in requiring that a student include among his major courses an Honors seminar, English 491 or 492 (normally in his junior year, but, on occasion, in his senior year), and an Honors essay course, English 493, in the fall term of his senior year. Permission to enroll in English 491, 492, or 493 will be granted by the chairman of the Honors Committee in the ten days preceding preregistration. Applicants for Honors courses must have demonstrated achievement at the high level described in the Department's brochure.

## The Independent Majors Program

For students who wish to design an Independent Major (see p. 22) with a component in English or American literature, a departmental representative will recommend advisers in the Department with particular interdisciplinary interests. Advisers will help to design major programs which focus on the relation between literature and other arts; the relation between literature and another discipline, such as history, linguistics, sociology, anthropology, psychology, or philosophy; the classical background of English literature; American studies; studies in the culture of the Middle Ages, the Renaissance, or other periods; interrelations between English and other literatures. Students in the Independent Majors Program may enroll in English 495–496, a course designed to meet a curricular need where no regular course is available. The Department will attempt to sponsor, in cooperation with other departments, special seminars for groups of students with common interdisciplinary interests.

## Distribution Requirement

The Distribution requirement in the humanities is satisfied by any two courses in English at the 200 level or higher other than 203–204, 205–206, 305–306, 385–386, 387–388, 485–486, 488 and 489, but a student may not enroll in both 251 and 255, or in both 252 and 256.

The Distribution requirement in the expressive arts can be satisfied by any two of the following: English 203, 204, 205, 206, 305, 306, 385, 386, 387, 388, 485, 486.

## Nonmajors

For students not majoring in English, the Department makes available a variety of courses at all levels: some courses at the 200 level are open to freshmen, and all of them are open, without prerequisite, to sophomores; courses at the 300 level are open to sophomores who have completed English 250 or 251–252 and to juniors and seniors; courses at the 400 level, most of which require the consent of the instructor, are open to specially qualified juniors and seniors.

## Teaching Preparation

Prospective teachers of English in secondary schools who seek temporary certification in New York State must fulfill all the requirements of the major. In addition, they elect a special program of professional courses. A detailed statement about programs for teachers is available in the office of the Department of English.

## Courses for Freshmen

As part of the Freshman Seminars Program, the Department of English offers a large number of one-semester courses, each conducted in small sections with limited enrollment. The courses are concerned with various forms of writing (narrative, biographical, expository), with the study of specific areas in English and American literature, and with the relation of literature to culture. Students may elect any two of these courses during their first year to satisfy the Freshman Seminar requirement. Descriptions of these courses are found in the section Freshman Seminars Program (p. 30). See also English 237 and 241.

## Intermediate Courses

**203–204 Creative Writing.** Throughout the year. Credit three hours a term. English 203 or consent of the instructor prerequisite to English 204. Sections limited to 15. M W 9:05 or 12:20, T Th 11:15 or 2:30, and conferences to be arranged. Mr. Hathaway and others. An introductory course in the theory and practice of writing narrative, poetry, and allied forms.

**205–206 Expository Writing.** Throughout the year. Credit three hours a term. English 205 or consent of the instructor prerequisite to English 206. Sections limited to 18. M W 9:05 or T Th 10:10 and conferences to be arranged. Mr. Mineka and others. For sophomores, juniors, and seniors who, having performed well in the Freshman Seminars Program (or in equivalent courses elsewhere), desire further practice in writing exposition. Regular weekly writing and reading assignments in the chief types of nonfictional prose such as argumentation, description, analysis, criticism, and personal essays.

**226 Modern British Literature (1890–1940).** Fall term. Credit three hours. Primarily for students who do not expect to major in English; not open to freshmen. M W F 1:25. Mr. Schwarz. A critical survey of major poetry and fiction. Selections will include works of Hardy, Conrad, Lawrence, Joyce, Yeats, Eliot, Auden, Thomas, and others.

**237 The Reading of Fiction.** Either term. Credit three hours. Strongly recommended for prospective English majors; open to freshmen. May be used to satisfy either the Freshman Seminars requirement or the Distribution requirement in the humanities, but not both. Sections limited to 22. Fall term. M W F 11:15 or 12:20; Th 2:30–3:45. Mr. Parker. Spring term, M W F 12:20 or 2:30. Mr. Parker and others. Forms of modern fiction, with emphasis on the short story and novella. Critical studies of works by English and American, as well as Continental

writers, from 1880 to the present: Chekhov, James, Conrad, Faulkner, Mann, Kafka, and others.

**241 Introduction to Drama.** Either term. Credit three hours. Strongly recommended for prospective English majors; open to freshmen. May be used to satisfy either the Freshman Seminars requirement or the Distribution requirement in the humanities, but not both. Sections limited to 22. M W F 10:10. Mr. States and others. A study of how drama molds feeling and comprehension by integrating such means available to the dramatist as action, language, and artistic design. Critical examination of plays of all periods, including the twentieth century, with major emphasis on plays written in English, but with collateral examples of outstanding plays from the European tradition. The syllabus will be adjusted from year to year to include plays produced on campus under the sponsorship of the Department of Theatre Arts.

**243 Shakespeare.** Either term. Credit three hours. Primarily for students who do not expect to major in English. Limited to 25. Fall term: M W F 2:30. Mr. Levy. Spring term: M W F 11:15. A critical study of representative plays from the principal periods of Shakespeare's career.

**250 The Reading of Poetry.** Either term. Credit four hours. Open only to prospective majors in English. Available in the fall term to sophomores and to those freshmen who have received advanced standing credit in English; available in the spring term to freshmen and sophomores. Sections limited to 25. M W F 2:30. Mr. Hertz and others. Readings in the major periods, modes, and genres of English and American poetry designed to widen the student's experience of poetry and sharpen his powers of understanding and response.

**251 Major English Writers.** Either term. Credit four hours. Open only to prospective majors in English. Available in the fall term to sophomores and to those freshmen who have received advanced standing credit in English; available in the spring term to freshmen and sophomores. Sections limited to 25. M W F 1:25 or T Th 2:30-3:45. Staff. Studies in selected works of major English writers from Chaucer to the seventeenth century, with some consideration of the English literary tradition.

**252 Major English Writers.** Either term. Credit four hours. Prerequisite: English 251. Sections limited to 25. M W F 1:25 or T Th 2:30-3:45. Staff. Studies in selected works of major English writers from the seventeenth to the nineteenth century, with some consideration of the English literary tradition.

**255-256 British Literature.** Throughout the year. Credit three hours a term. First term not prerequisite to the second. Primarily for students who do not expect to major in English. T Th S 12:20. Instructor to be announced. Lectures and commentary on some notable works by prominent English, Scottish, and Irish authors. First term: medieval balladists to Dr. Johnson. Second term: Robert Burns to James Joyce.

## Courses for Upperclassmen

These courses are mainly intended for juniors and seniors. Courses numbered 300 are open to sophomores who have completed English 251-252 or English 250.

**305-306 The Art of the Essay.** Throughout the year. Credit four hours a term. First term not prerequisite to the second. Sections limited to 18. T Th S 10:10. Staff. Intensive writing practice in practical criticism, general exposition, and personal essays. Reading and discussion of eighteenth-, nineteenth-, and twentieth-century essayists.

**308B Middle English Literature.** Spring term. Credit four hours. M W F 10:10. Mr. Hill.

A critical survey of the major works of Middle English literature. Readings will include *The Owl and the Nightingale*, Middle English lyrics, the Pearl-poet, Langland, Middle English drama, and Malory. The reading will be for the most part in translation. Some attention will be given to relevant medieval French and Latin works.

**309 The Sixteenth Century.** Fall term. Credit four hours. M W F 9:05. Mr. Ettin. The main traditions in English poetry from 1530 to 1603, with some attention to the prose of the period. Special emphasis on such figures as Wyatt, Sidney, Spenser, Marlowe, and Shakespeare.

**310 The Seventeenth Century.** Spring term. Credit four hours. M W F 9:05. Mr. Novarr. The main traditions in poetry from Donne to Marvell and in prose from Bacon to Bunyan: the metaphysical poets; Jonson and the sons of Ben; the King James Bible; essay, character, epistle, and biography.

**315 The Later Seventeenth and Early Eighteenth Centuries (1660-1730).** Fall term. Credit four hours. M W F 2:30. Mr. Hume. Readings in such writers as Bunyan, Dryden, Rochester, Pope, Gay, Swift, and Thomson; Locke, Shaftesbury, Mandeville, Addison, and Steele. Study of literature, art, politics, and philosophy.

**316 The Later Eighteenth Century (1730-1800).** Spring term. Credit four hours. M W F 2:30. Mr. Brownell. Readings in Johnson, Goldsmith, Boswell, Gray, Burns, Smart, Burke, Hume, Blake, and others. Consideration of changing literary, political, philosophical, and social climates.

**317 The Romantic Poets.** Fall term. Credit four hours. T Th 11:15 and Saturday section to be arranged. Mr. Parker. A critical study of the poetry of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.

**320 The Victorians.** Spring term. Credit four hours. T Th S 11:15. Mr. Mineka. The major poets and prose writers from Carlyle to Bernard Shaw, studied in relation to the thought of the time and to the literature of the twentieth century.

**321 The Twentieth Century.** Fall term. Credit four hours. M W F 10:10. Mr. Mizener. The character of twentieth-century literature, as shown by the work of eight or ten major poets and novelists, from Yeats to Robert Lowell.

**327 The Growth of American Literature.** Fall term. Credit four hours. M W F 11:15. Mr. Bishop. The literature of ideas produced by America's Puritan and Enlightened writers: Taylor, Edwards, Franklin; and the first achievements of national literature: Irving, Cooper, Poe, Hawthorne.

**328 The American Renaissance.** Spring term. Credit four hours. M W F 1:25. Mr. Colacurcio. America's literary maturity at mid-century: the interrelated careers and masterpieces of Emerson, Thoreau, Hawthorne, Melville, Whitman, and Dickinson.

**329 Realism and Naturalism in American Literature.** Fall term. Credit four hours. M W F 1:25. Mr. Elias. The literary expression of new attitudes toward society and the individual after the Civil War as exemplified primarily in the theory and practice of Mark Twain, W. D. Howells, Henry James, and Stephen Crane and incidentally in the work of representative writers concerned with regional, political, and ethnic themes.

**330 American Literature in the Twentieth Century.** Spring term. Credit four hours. M W F 12:20. Mr. Slatoff. The principal thematic and formal concerns of such major writers as Robinson, Dreiser, Frost, Hemingway, Stevens, Faulkner, and Wright.

**332 The Negro in American Literature.** Spring term. Credit four hours. M W F 11:15. Mr. Redding.

The development of writing by Negroes from the beginning to the present, with particular attention to the special experience of being black in America.

**335 The Modern American Novel.** Fall term. Credit four hours. M W F 12:20. Mr. Kaye.

A critical study of American fiction, beginning with Howells and James and concluding with selected contemporary novels.

**337 The Nineteenth-Century Novel.** Fall term. Credit four hours. M W F 12:20. Mrs. Blackall.

A critical study of English fiction from Austen to Conrad.

**[339 Representative English Dramas.** Fall term. Credit four hours. M W F 11:15. Mr. McMillin. Not offered in 1972-73.]

**350 Literature and Theory.** Spring term. Credit four hours. M W F 2:30. Mr. Parker.

A consideration of various approaches to literature, with emphasis on illustrative examples from a range of periods and genres. Readings, lectures, and discussions will explore the relevance for interpretation of a work's political, social, and intellectual context, of its rhetorical and allegorical structures, of the personality and biography of the author, and of the influence of the past, especially the literary past. Some attention will also be paid to mimetic, expressive, and structural theories of fiction.

**365 Chaucer.** Fall term. Credit four hours. M W F 11:15. Mr. Farrell.

Reading and critical analysis: *Troilus* and a large selection from the *Canterbury Tales*.

**368 Shakespeare.** Spring term. Credit four hours. M W F 11:15. Mr. Fogel.

An introduction to the works of Shakespeare, based on a selection of plays representative of the stages of his artistic development and the range of his achievement.

**385-386 Narrative Writing.** Throughout the year. Credit four hours a term. Prerequisite: English 203-204 or consent of the instructor. T Th 11:15 and conferences to be arranged. Fall term, Miss Russ. Spring term, Mr. Hathaway. The writing of fiction; study of models; analysis of students' work.

**387-388 Verse Writing.** Throughout the year. Credit four hours a term. Prerequisite: 203-204 or consent of the instructor. T 1:25-3:20. Fall term, Mr. Matthews. Spring term, Mr. Ammons.

The writing of poetry; study of models; analysis of students' poems; personal conferences.

**[402 Literary Criticism.** Spring term. Credit four hours. Discussion. Prerequisite: consent of the instructor. T Th S 10:10. Mr. Ettin. Not offered in 1972-73.]

**412 Elizabethan and Jacobean Drama.** Spring term. Credit four hours. Discussion. Prerequisite: consent of the instructor. M W F 10:10. Mr. Ettin. Critical study of plays by Marlowe, Marston, Jonson, Beaumont, Fletcher, Webster, Ford, and others.

**413 Shakespeare.** Fall term. Credit four hours. Discussion. Prerequisites: English 368 and consent of the instructor. M W F 10:10. Mr. Redding. An intensive study of three or four of Shakespeare's plays.

**[417 The School of Donne.** Fall term. Credit four hours. Discussion. Prerequisite: consent of the instructor. M W F 11:15. Mr. Novarr. Not offered in 1972-73.]

**426 Restoration and Eighteenth-Century Drama.** Spring term. Credit four hours. Discussion. Prerequisite: consent of the instructor. T Th S 9:05. Mr. Hume.

Emphasis on Etheredge, Dryden, Wycherley, Congreve, Gay, Fielding, and Sheridan.

**442 The Old World and the New.** Spring term. Credit four hours. T Th S 9:05. Mr. Strout.

The American experience of Europe, as reflected in literature, studied in relation to historical development. Selected writings of Irving, Hawthorne, Melville, Twain, James, Hemingway, and others.

**445 Studies in American Literature.** Fall term. Credit four hours. Prerequisite: consent of the instructor. M W F 2:30. Mr. Redding.

Topic for 1972-73: An examination of idealism in American writings.

**447 Studies in Nineteenth-Century American Literature.** Fall term. Credit four hours. Discussion. Prerequisite: consent of the instructor. T Th S 11:15. Instructor and topic to be announced.

**452 Major Victorian Poets.** Spring term. Credit four hours. Discussion. Prerequisite: consent of the instructor. T Th S 11:15. Mrs. Mermin.

The poetry of Tennyson, Browning, and Arnold, and a brief survey of the Pre-Raphaelites.

**455 Late Victorian and Edwardian Literature (1890-1914).** Fall term. Credit four hours. Prerequisite: consent of the instructor. T Th S 11:15. Mr. Parrish.

The ways in which such writers as Hopkins and Housman, Hardy and Moore, Wilde and Shaw, Beerbohm and Wells changed Victorian attitudes and influenced our own.

**457 Studies in the Novel.** Fall term. Credit four hours. Discussion. Prerequisite: consent of the instructor. M W F 12:20. Mr. Schwarz. Topic for 1972-73 to be announced.

**462 Major Twentieth-Century Poets.** Fall term. Credit four hours. Discussion. Prerequisite: consent of the instructor. M W F 10:10. Mr. Marcus. Detailed examination of Yeats and Eliot, with some consideration of Ezra Pound.

**463 Studies in Modern Drama.** Fall term. Credit four hours. Discussion. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Kaufman.

A study of themes and dramatic form in T. S. Eliot, O'Casey, Tennessee Williams, and the postwar English playwrights, such as Pinter and Osborne.

**466 The Anglo-Irish Literary Tradition.** Spring term. Credit four hours. Discussion. Prerequisite: consent of the instructor. M W F 12:20. Mr. Archibald.

A study of the major works of such writers as Swift and Burke, Joyce and Yeats, of some relationships between them, and of what this suggests about the Irish situation.

**468 Contemporary American Poetry.** Spring term. Credit four hours. Discussion. Prerequisite: consent of the instructor. M W F 2:30. Mr. Matthews.

Emphasis on the work of Robert Creeley, Robert Lowell, Theodore Roethke, and James Wright; selective readings from the work of such poets as A. R. Ammons, Robert Bly, Edward Dorn, Randall Jarrell, W. S. Merwin, Charles Olson, Louis Simpson, Gary Snyder, and Richard Wilbur.

**[471 The Modernist Tradition in Poetry.** Fall term. Credit four hours. Discussion. Prerequisite: consent of the instructor. M W F 12:20. Mr. Hathaway. Not offered in 1972-73.]

**480 Studies in American Culture.** Spring term. Credit four hours. Discussion. Prerequisites: senior standing and consent of the instructor. T 1:25-3:20. Mr. Elias.

A study of the relations between the literature and the social and political issues of a period in American cultural history. Topic for 1972-73: the 1930s.

**485-486 Seminar in Writing.** Throughout the year. Credit four hours a term. Discussion. Prerequisite: English 385-



386 or consent of the instructor. W 1:25–3:20. Mr. Slatoff. For advanced writing students who should be prepared to complete, during the year, a writing project in verse, narrative, or essay. Exploration of principles of literary theory pertinent to projects undertaken.

**488 The Teaching of English.** Fall term. Credit four hours. Prerequisites: senior standing and admission to the Department's teacher preparation program. Hours to be arranged. Mr. Gottschalk. The problems and methods of teaching English in high school.

**489 Observation and Practice Teaching.** Either term. Credit six hours. Prerequisites: senior standing and admission to the Department's teacher preparation program. Hours to be arranged. Mr. Gottschalk.

**Classic and Renaissance Drama (Comparative Literature 325).**

**European Drama 1660–1900 (Comparative Literature 326).**

**Modern Drama (Comparative Literature 327).**

**The Literature of Europe since the Renaissance (Comparative Literature 329–330).**

**Medieval Literature (Comparative Literature 333–334).**

**The Modern European Novel (Comparative Literature 351–352).**

**Allegory and Symbolism (Comparative Literature 402).**

**Medieval Arthurian Literature (Comparative Literature 404).**

**Myth and Literature (Comparative Literature 416).**

**Nature and Norms in Renaissance and Baroque Literature (Comparative Literature 422).**

**Utopias and Imaginary Voyages from the Renaissance to the Enlightenment (Comparative Literature 461).**

**Three Novelists: Stendhal, Dickens, and Mann (Comparative Literature 471).**

**Kierkegaard (Comparative Literature 481).**

**The Historical Novel (Comparative Literature 552).**

## Honors Courses

Enrollment in English 491 and 492 is limited to twelve students per seminar. All seminars are open to juniors and seniors, both those in the English Honors Program and others who have secured prior permission from the chairman of the Honors Committee. English 493 and 494 are open to seniors who have received permission. English 495–496 is open to students in the Independent Majors Program.

**491A The Criticism of Poetry.** Fall term. Credit four hours. T Th 1:25–3:20. Topic for 1972–73 to be announced.

**491B The Criticism of Fiction.** Fall term. Credit four hours. T Th 1:25–3:20. Topic for 1972–73 to be announced.

**491C Studies in Dramatic Form.** Fall term. Credit four hours. T Th 1:25–3:20. Topic for 1972–73 to be announced.

**492A The Criticism of Poetry.** Spring term. Credit four hours. T Th 1:25–3:20. Topic for 1972–73 to be announced.

**492B Fiction and the Irrational.** Spring term. Credit four hours. T Th 1:25–3:20. Mr. Rosenberg. Intensive study of six or seven novels and novellas, including Dostoevsky's *The Devils*, Tolstoy's *Kreutzer Sonata*, Flaubert's *Madame Bovary*, De Quincey's *Confessions of an English Opium Eater*, and Mann's *Death in Venice*. Short papers and reports.

**492C Studies in Dramatic Form.** Spring term. Credit four hours. T Th 1:25–3:20. Topic for 1972–73 to be announced.

**493 Honors Essay Tutorial.** Fall term. Credit four hours. Hours and instructor to be arranged.

**494 Independent Study.** Spring term. Credit four hours. Prerequisites: Successful completion of an Honors course and of English 493. Hours and instructor to be arranged.

**495–496 Supervised Study.** Throughout the year. Credit four hours a term. Prerequisite: acceptance in Independent Majors Program and consent of departmental adviser.

## Graduate Courses

These courses are for graduate students, but a few especially qualified undergraduates may enroll in 500-level courses. All students must secure the consent of the instructor before registering.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**500 Critical and Scholarly Perspectives.** Either term. Credit five hours.

**501 Readings in Old English.** Fall term. Credit five hours.

**502 Beowulf.** Spring term. Credit five hours.

**503 Middle English.** Fall term. Credit five hours.

**504 Chaucer.** Spring term. Credit five hours.

**506 Philological Problems in the Study of English Literature.** Credit five hours.

**508 The English Language.** Credit five hours.

**510 Grammatical Analysis.** Credit five hours.

**512 Medieval Drama.** Credit five hours.

**513 Elizabethan and Jacobean Drama.** Credit five hours.

**520 Readings in Seventeenth-Century Literature.** Credit five hours.

**521 Milton.** Credit five hours.

**523 Studies in Dramatic Form: Tragedy.** Credit five hours.

**530 The New England Mind, 1620–1750.** Credit five hours.

**533 The Intellectual Origins and Development of the Romantic Movement in America.** Fall term. Credit five hours.

**534 The Intellectual Origins of the Modern Consciousness in American Literature and Thought.** Spring term. Credit five hours.

**535 Studies in Nineteenth-Century American Literature.** Credit five hours.

**537 Studies in Twentieth-Century American Literature.** Credit five hours.

**549–550 Creative Writing.** Throughout the year. Credit five hours a term.

**554 Studies in English Poetry.** Credit five hours.

**561 Studies in Shakespeare.** Credit five hours.

**564 Dramatic Literature: Shaw and O'Neill.** Credit five hours.

**568 The Eighteenth Century.** Credit five hours.

**571 Studies in Romanticism.** Credit five hours.

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- 572 The Romantic Period.** Credit five hours.
- 575 Victorian Prose.** Fall term. Credit five hours.
- 576 Victorian Poetry.** Spring term. Credit five hours.
- 577 Dickens.** Credit five hours.
- 582 Studies in Modern Fiction.** Credit five hours.
- 592 Twentieth-Century Literature: Yeats.** Credit five hours.
- 594 Studies in Twentieth-Century American Poetry.** Credit five hours.
- 597 Literary Criticism.** Fall term. Credit five hours.
- 598 Master's Essay.** Either term. No credit.
- 599 Practice Teaching.** Either term. Credit nine hours.
- 600 Directed Study.** Either term. Credit five hours.
- 601 Group Study.** Either term. Credit five hours.
- 604 Textual Criticism of Old English Poetry.** Credit five hours.
- 608 Studies in Medieval Literature.** Spring term. Credit five hours.
- 616 Studies in the Sixteenth Century.** Credit five hours.
- 618 Studies in the Seventeenth Century.** Credit five hours.
- 672 Wordsworth.** Credit five hours.
- 698 Teaching and Research.** Either term. Credit five hours.

## French

For complete course listings and for details of the major, see the heading French in the section Modern Foreign Languages and Literatures.

## Geological Sciences

Mr. J. E. Oliver, Chairman; Messrs. A. L. Bloom, B. Bonnichsen, B. L. Isacks, G. A. Kiersch, S. S. Philbrick, W. Travers, J. W. Wells.

The Department of Geological Sciences is organized as an intercollege department in the College of Arts and Sciences and the College of Engineering. For those students in the College of Arts and Sciences, the department offers three courses of study for majors in geological sciences: (a) the structured major; (b) the interdisciplinary major; and (c) the unstructured major. For detailed information on these options and on the prerequisites to the major, please consult the Department of Geological Sciences, 210 Kimball Hall.

Students wishing certification as earth science teachers must take courses in geological sciences in their Science Education program. For appropriate groupings, consult the Department.

Students majoring in Geological Sciences should attend informal seminars and take advantage of other activities available through the Department of Geological Sciences.

## Distribution Requirement

The Distribution requirement in physical sciences is satisfied in geological sciences by Geology 101-102.

For a list of course offerings, please consult the Department Office, 210 Kimball Hall.

## German Literature

For complete course listings and for details of the major, see the heading German in the section Modern Foreign Languages and Literatures.

## Government

Mr. A. T. Dotson, Chairman; Messrs. B. R. O'G Anderson, D. E. Ashford, P. H. Auerbach, D. J. Danelski, W. J. Dannhauser, L. G. E. Edmondson, M. Einaudi, E. J. Eisenach, M. J. Esman, Mrs. Barbara Hinckley, Messrs. G. McT. Kahin, D. A. Karns, E. G. Kenworthy, A. J. Milnor, D. P. Mozingo, M. V. Nadel, G. H. Quester, S. D. Resnick, R. Rosecrance, M. Rush, P. J. Sharfman, S. Tarrow, N. T. Uphoff, D. E. Van Houweling, R. Weissberg.

For a major in government the following courses must be completed: (1) three of the following introductory courses—Government 101, Government 104, Government 203, and Government 206; (2) a minimum of twenty-four additional hours in Department courses numbered 300 or above; (3) in related subjects, a minimum of twelve hours selected with the approval of the adviser from courses numbered 300 or above in the departments of anthropology, economics, history, philosophy, psychology, and sociology. (S-U options are not allowed in any course needed to fulfill the Government major.)

Juniors and seniors majoring in the Department of Government who have superior grade records may apply for supervised study in government with a particular instructor, whose consent is required. See the description for Government 498 and 499 (Supervised Study).

To accommodate new courses or changes in present courses, there will be a list of changes and new offerings maintained in the departmental office.

## The Honors Program

The Honors Program provides intensive, supervised study for government majors who have demonstrated their potentialities for advanced work in the field. An average of B+ in government courses is the normal requirement for admission to the Program. Prospective applicants are encouraged to take a Major Seminar (Government 300) in the fall semester of their junior year. Students may enroll in the Program for either two or three semesters, depending on when they are accepted and the period of time it takes them to complete the requirements. Applications should be submitted either by Friday, October 20 of the student's junior year, for spring admission; or by Friday, March 23, for admission the following fall. Students admitted in the spring of their junior year may complete the program in either two or three semesters; those admitted in the fall of their senior year must finish in two semesters.

Candidates for the degree of Bachelor of Arts with Honors in Government will complete the normal requirements for a major in the Department, during which they must take Government 493 and 494.

Degrees with *cum laude*, *magna cum laude*, or *summa cum laude* in government will be recommended for students who successfully complete the Honors Program.

## Distribution Requirement

The Distribution requirement in social sciences is satisfied in government by taking two of the following courses: Government 101, 104, 203, and 206.

**101 American Government and Politics.** Fall term. Credit three hours. Open to all students with first preference for students in the College of Arts and Sciences. Lectures, T Th 2:30. Discussion sections to be arranged. Mr. Danelski. Principles, problems, and processes in American political life.

**104 Comparative Government.** Spring term. Credit three hours. Open to all students. Lectures, T Th 2:30. Discussion sections to be arranged. Mr. Tarrow. A comparative study of major political movements and ideologies and of governmental institutions and processes in modern democratic and nondemocratic states as well as in some of the newly emerging countries.

**203 Introduction to Political Theory.** Spring term. Credit three hours. Open to all students. Lectures, M W 11:15. Discussion sections to be arranged. Mr. Dannhauser. A survey of the development of Western political theory from Plato to the present. Readings from the work of the major theorists and an examination of the relevance of their ideas to contemporary politics will be stressed.

**206 Introduction to International Relations.** Fall term. Credit three hours. Open to all students. M W 11:15, plus a third hour to be arranged. Mr. Rosecrance. An introduction to the basic concepts and practice of international relations.

## Freshman Seminars

As part of the Freshman Seminar Program, the Department of Government will offer the following two courses: Since they are equivalents of Government 101 and 104, they may be counted toward the major.

**101S American Government.** Either term. Credit three hours. A seminar version of Government 101. (See above.)

**104S Comparative Government.** Either term. Credit three hours. A seminar version of Government 104. (See above.)

## Major Seminars

**300 Major Seminars.** Either term. Credit four hours. Hours to be arranged. Every major in the Department is encouraged to take at least one major seminar during his junior or senior years. The topics of the seminars and the names of the faculty offering them each semester will be announced prior to the registration period. Forms are provided each semester to indicate seminar preferences. Nonmajors will be admitted, but Government majors are given priority.

## American Government and Institutions

Prerequisite for all courses in this section, Government 101, or consent of the instructor, unless the course description indicates otherwise. Open to sophomores, juniors, and seniors unless specified otherwise.

**312 Urban Politics.** Spring term. Credit four hours. Open to all students. Lectures, M W 10:10, plus labs to be arranged. Mr. Van Houweling. Analysis of several significant problems facing urban areas and possible solutions. The effects of political institutions, economic considerations and the distribution of power in the American society will be emphasized.

**315 Interest Groups and Informal Representation in American Politics.** Spring term. Credit four hours. T Th 2:30-4. Mr. Milnor. Role of groups in the Congress and bureaucracy. Special attention to the limits of the group system, to the group system and social reform, and to the problems of representation for the poor.

**316 The American Presidency.** Spring term. Credit four hours. No prerequisite; Government 101 recommended. M W F 11:15. Mr. Nadel. Analysis of the politics of the presidency and the executive branch with emphasis on executive-legislative relations, executive branch policymaking, and the problems of the modern presidency.

**317 Leadership Selection.** Spring term. Credit four hours. M W F 1:25. Mrs. Hinckley. A study of American political leadership selection through recruitment, nominations, and elections. The course will examine the impact of public opinion, social elites, parties, and other political organizations at the different stages of the selection process, and will include one short empirical project of the student's own design.

**318 The American Congress.** Fall term. Credit four hours. M W F 11:15. Mr. Milnor. An intensive study of politics and policy formation in Congress. Special emphasis on the problems of the representative assembly in the twentieth century.

**319 American Political Behavior.** Fall term. Credit four hours. T Th 11:15-12:45. Mr. Weissberg. This course examines the political beliefs and behavior of Americans. Particular attention will be given to the nature and distribution of ideology; the reasons for differential political participation; and of such collective behavior as riots and mass movements.

**320 Public Opinion and American Democracy.** Spring term. Credit four hours. T Th 11:15-12:45. Mr. Weissberg. An analysis of the political beliefs of Americans in the context of alternative democratic theories. Both the ways Americans acquire their beliefs and the consequences (if any) of these beliefs for public policy will be examined. The goal will be to appraise existing opinion formation and implementation in terms of the requirements of alternative democratic theories.

**[321 Politics and Public Policy.** Fall term. Credit four hours. T Th 2:30. Mr. Nadel. Not offered in 1972-73.]

**[323 Public Administration: The Fourth Branch.** Fall term. Credit four hours. M W F 10:10. Mr. Dotson. Not offered in 1972-73.]

**327 The Supreme Court as a Democratic Institution.** Fall term. Credit four hours. T Th S 10:10. Mr. Danelski. An analysis of contemporary issues in civil liberties and civil rights, with emphasis on Supreme Court decisions. Cases will be analyzed in terms of democratic theory and the social and political context in which they arose.

**328 The Supreme Court as a Political Institution.** Spring term. Credit four hours. T Th S 10:10. Mr. Danelski. An analysis of the role and function of the Supreme Court in the American polity with an emphasis on decision-making and the impact of the Court's decisions.

## Comparative Government

Prerequisite for all courses in this section, Government 104, or consent of the instructor, unless course description indicates otherwise. Open to sophomores, juniors, and seniors unless specified otherwise.

**[333 Government and Politics of the Soviet Union.** Fall term. Credit four hours. M W F 1:25. Mr. Rush. Not offered in 1972-73.]

**[338 Politics and Modernization.** Spring term. Credit four hours. M W F 10:10. Mr. Dotson. Not offered in 1972-73.]

**340 Government and Politics of Latin America.** Fall term. Credit four hours. M W F 10:10. Mr. Kenworthy. An introduction to the national politics of the larger nations in recent decades, offering alternative conceptions of power

relations (e.g., pluralist, oligarchic). While external influences are not ignored, the focus is upon domestic politics.

**341 Society and Politics in Contemporary France.** Fall term. Credit four hours. T Th 11:15–12:45. Mr. Auerbach. An introduction to politics and government in Fifth Republic France. History, culture, and social organization will be emphasized as well as the effects of the operation of the French political system on its national and international environments. Selected French films will be shown.

**344 Government and Politics of Southeast Asia.** Fall term. Credit four hours. M W F 10:10. Mr. Anderson. Analysis of the organization and functioning of the political systems of Southeast Asia, with special attention to the problems of postcolonial social and political development.

**[347 Chinese Government and Politics.** Fall term. Credit four hours. M W F 12:20. Mr. Teiwes. Not offered in 1972–73.]

**349 Political Role of the Military.** Spring term. Credit four hours. M W F 10:10. Mr. Anderson. Comparative study of selected modern states and types of political systems in which the military have played a major role in domestic politics. Attention will be given to the social and ideological character of the "politicized" military and various forms of military government.

**350 Comparative Revolutions.** Fall term. Credit four hours. M W 2:30–4. Mr. Mozingo. An analysis of major revolutionary movements since World War II (China, Indonesia, Cuba, Algeria, Vietnam); their social-political origins, ideology, and organization; with special emphasis on contrasting strategies and roads to power.

**361 Race and Politics: Comparative Studies.** Spring term. Credit four hours. M W F 3:35. Mr. Edmondson. Comparisons of the influence of race in political systems, primarily the United States, South Africa, Zimbabwe (Rhodesia), and Britain. Subjects to be covered include: racism in political culture and political socialization; styles and consequences of race-interest articulation; effectiveness of measures for or against discrimination and influences on the decision-making process; race and socioeconomic stratification; impact of the international system; and reviews of political problems in some other multiracial or polyethnic states.

**362 Government and Politics in Africa.** Fall term. Credit four hours. M W F 3:35. Mr. Edmondson. Analysis of the organization and functioning of African (primarily sub-Saharan) political systems with special attention to issues of political change and development.

**374 The Politics of Population.** Fall term. Credit four hours. T Th 2:30–4. Mr. Quester. Political problems and approaches on questions of population. Topics to be considered will include birth control and population expansion policies, immigration and "brain drain," education, attempts at cultural standardization and assimilation in multilingual societies, and alternative land tenure systems.

**410 From Politics to Policy: The Political Economy of Choice.** Fall term. Credit four hours. T Th 2:30–4. Mr. Uphoff. In this course, we will examine the realities, and strategies of policymakers in the U.S., Third World, and international relations. The environment of political action and policy choice will be considered analytically from the perspective of actors and choosers, using the framework of a new political economy. The framework will be applied in particular to school desegregation in Virginia and Chicago, the Mexican Revolution's making and implementation, and policymaking on Vietnam.

**411 Elites and Society: The Political Economy of Power.** Spring term. Credit four hours. M W 2:30–4. Mr. Uphoff.

This course should bring together students who have an interest in the nature and uses of power in politics. It will consider how "power" has been treated by earlier political thinkers as well as by contemporary social scientists. The contending arguments about elitism, pluralism, and populism will be examined with reference to power in American, Third World, and international politics. The aim of this approach will be to consider the implications of different distributions and bases of power for the making of public policy.

**443 Political Development in Western Europe.** Spring term. Credit four hours. T Th 11:15–12:45. Mr. Auerbach. An analysis of the political development and/or collapse of ancient and modern societies in the competitive environment of Western Europe. The objective of this course is to arrive at historical and theoretical perspectives on contemporary political change in Europe.

## Political Theory

Prerequisite for all courses in this section, Government 203, or consent of the instructor, unless course description indicates otherwise. Open to sophomores, juniors, and seniors unless specified otherwise.

**303 Classics in Political Thought.** Fall term. Credit four hours. M W F 11:15. Mr. Dannhauser. Close textual analysis of a select number of basic texts in political thought. Topics for 1972: The Problem of Socrates, reading and discussion of Aristophanes, *The Clouds*; Plato, *The Republic*; and Nietzsche, *The Twilight of the Idols*. This course is designed to complement Government 203 but can be taken independently of it.

**306 Human Nature and Political Theory.** Fall term. Credit four hours. T Th 2:30–4. Mr. Resnick. A wide-ranging examination of alternative concepts of the self. Readings selected from the history of political speculation in the West: Plato, Hobbes, Marx, Freud, Marcuse, R. D. Laing and others.

**[353 Theoretical Roots of Modern Politics.** Fall term. Credit four hours. T Th 2:30. Mr. Eisenach. Not offered in 1972–73.]

**[354 Political Authority in Mass Society.** Fall term. Credit four hours. T Th S 11:15. Mr. Eisenach. Not offered in 1972–73.]

**355 American Political Thought.** Spring term. Credit four hours. T Th 2:30–4. Mr. Eisenach. Survey of American political thought with stress on puritan thought, constitutional theory, selected nineteenth-century literature and contemporary political science.

**357 The Politics of Imaginary Societies.** Fall term. Credit four hours. M W 2:30–4. Mr. Auerbach. An exploration into some of the fictional or fantastic societies which writers, politicians and philosophers have created to draw attention to major political issues, to influence political behavior, or to speculate on politics with a freedom which few academics have allowed themselves.

**364 Basic Problems in Political Theory.** Spring term. Credit four hours. M W 2:30–4. Mr. Resnick. (Originally Government 464) Topics to be announced.

**457 The Logic of Liberalism.** Spring term. Credit four hours. T Th 11:15–12:45. Mr. Eisenach. An examination of Anglo-American liberal political thought. Stress will be placed on the legal, psychological, economic, and religious justifications of liberal politics.

## International Relations

Prerequisite for all courses in this section, Government 206, or consent of the instructor, unless course description



indicates otherwise. Open to sophomores, juniors, and seniors unless specified otherwise.

**[334 Foreign Policy of the U.S.S.R.]** Spring term. Credit four hours. M W F 1:25. Mr. Rush. Not offered in 1972-73.]

**337 Imperialism.** Spring term. Credit four hours. M W F 10:10. Mr. Kenworthy.  
A critical reading of modern conceptions of imperialism as contributed by writers of various disciplines and ideologies. The empirical validity of these conceptions will be judged by examining the several ways by which the U.S. interacts with Latin America, with less attention given the international relations of other great powers.

**360 Race in International Relations.** Fall term. Credit four hours. T Th 3:35-5. Mr. Edmondson.  
Analysis of the factors influencing the internationalization of racial issues and their impact on the contemporary international system. Subjects to be covered include: racial and, at times, ethnic influences in foreign-policy decision making; power distribution and power management in the international system; imperialism, colonialism, and self-determination issues; transnational group linkages and ideologies; and their impact in and through international law and international organization.

**369 Arms Control and Disarmament.** Fall term. Credit four hours. Prerequisite: One course in International Relations or permission of the instructor. T Th 11:15-12:45. Mr. Sharfman.

This course views arms control and disarmament from the viewpoints of theory, history, and the U.S. policy process. About half the course is devoted to examining the Strategic Arms Limitation Talks (SALT) and the proposed Mutual Balanced Force Reduction in Europe as cases in point.

**370 Theories of International Relations.** Fall term. Credit four hours. M W F 9:05. Mr. Rosecrance.  
A survey of relevant theories of international relations emphasizing war prevention and conflict resolution. Theories will be tested against the international experience of the past two centuries.

**371 Defense Policy and Arms Control.** Spring term. Credit four hours. T Th 2:30-4. Mr. Quenter.  
Political analysis of the needs for military defense, and the problems caused thereby. Subjects to be covered will include nuclear deterrence reasoning, procedures for disarmament, military strategy, military-industrial complexes, and defense budgeting and policy procedures.

**375 Contemporary American Foreign Policy.** Spring term. Credit four hours. M W F 1:25. Mr. Sharfman.  
An analysis of the dilemmas which confront American foreign policy at the present time, both individual problems and more general questions of capabilities, priorities, and morality. The frame of reference will be the period since 1945.

**[376 The International Politics of Southern Asia.]** Fall term. Credit four hours. M W F 11:15. Mr. Leifer. Not offered in 1972-73.]

**377 The United States and Asia.** Spring term. Credit four hours. M W F 9:05. Mr. Kahin.  
An analysis of the relations of the United States with the major states of Asia and with those smaller countries (especially Vietnam) with which it is particularly concerned; attention is also given to the relationship of American policy to the Asian policies of France, Great Britain, and Soviet Russia.

**378 The United States and Western Europe.** Spring term. Credit four hours. M W F 11:15. Mr. Sharfman.  
An examination of the changing trans-Atlantic relationships, as a problem in theory and as an issue for policy. The topics covered will include: the impact and future of European integration; detente and the *Ostpolitik*; economic interdependence and the role of multinational corporations;

monetary issues; cultural penetration; problems of defense and arms control; the relative decline in American power; and the ways in which diplomacy tries to accommodate these pressures.

**379 Economics and World Politics.** Spring term. Credit four hours. T Th S 10:10. Mr. Karns.  
A survey of the effects of economics, foreign aid, trade, and changing business patterns on the political relations among nation states. Attention will be given to multinational corporations, monetary systems and crises, and international economic institutions.

**381 The United Nations.** Fall term. Credit four hours. M W F 9:05.  
The politics of international organization, with primary emphasis on the political and peacekeeping functions of the United Nations. Redistribution of wealth and power, human rights, international service and recruitment, integration, and world order functions are also studied.

**471 International Law and World Politics: Peaceful Functions.** Fall term. Credit four hours. M W F 11:15.  
The role and functions of the law and lawyers in regulating peaceful relationships among states. Among the problems studied are legal issues involved in relations between western, socialist, and African and Asian nations; legal aspects of conflict between private and socialist patterns of development; problems of nationality, territory, jurisdiction, transnational agreement; the law of human rights.

**472 International Law and World Politics: War and Armed Conflict.** Spring term. Credit four hours. M W F 1:25.  
The role of international law and organization in creating minimum order in international relations; laws of war and neutrality and efforts to minimize resort to force; war crimes; nuclear and conventional weapons systems limitations. Case studies include Vietnam, Cuba, Korea, the Congo, and the Middle East.

**478 The Foreign Policy of China.** Spring term. Credit four hours. T Th 10:10-11:40. Mr. Mozingo.  
An analysis of Chinese concepts of foreign relations and the policy-making process in the People's Republic of China. Emphasis will be placed on such topics as the contemporary Chinese view of their position in the international community and a comparison of the making and implementation of contemporary Chinese policies with respect to such areas as the Soviet bloc, Afro-Asian countries, and the West.

**[479 The Development of the International Communist Movement.]** Spring term. Credit four hours. M W F 1:25. Mr. Teiwes. Not offered in 1972-73.]

## Political Methodology

All courses in this section are open, without prerequisite to sophomores, juniors, and seniors, unless course description indicates otherwise.

**[302 Introduction to Empirical Political Analysis.]** Spring term. Credit four hours. M W F 10:10. Mr. Karns. Not offered in 1972-73.]

**480 Mathematical Models and Political Analysis.** Fall term. Credit four hours. Prerequisite: One course which emphasizes empirical data analysis or consent of the instructor. M W 1:25-3:25. Mr. Karns.  
A critical examination of the utility of mathematical techniques in political analysis. The underlying assumptions of various mathematical analytical techniques, such as decision making in situations of uncertainty, change and response models, time series, factor analysis, and causal modeling will be critically examined for both the effect on results and the coherence with nonmathematical political analysis. Discussion of techniques and assumptions will be illustrated by individual data analysis projects.

## Honors Courses

**493 Honors Tutorials.** Either term. Credit four hours. The tutorials involve weekly sessions with professors specializing in fields closest to the student's interests. The tutorials call for periodic papers and intensive reading. Students who join the Program in their junior year may take Government 493 for two successive semesters.

**494 The Honors Thesis.** Either term. Credit eight hours. The Honors Thesis is the major academic obligation undertaken by the student during his final year at the University. The final deadline for theses is the last day of class instruction in the semester of theses writing. All candidates for Honors will be given an oral examination on their theses.

## Supervised Study

Juniors and seniors majoring in government who have superior grade records may apply for supervised study in government with a particular instructor. The applicant must present a well-defined program of study that cannot be satisfied by the taking of regular courses. Emphasis will be placed on the capacity to subject a body of related readings to analysis and criticism. The consent of the instructor is required.

**498 Readings.** Either term. Credit two hours. Staff.

**499 Readings.** Either term. Credit four hours. Staff.

## Graduate Seminars

For complete descriptions of graduate courses see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

## History

Mr. L. Pearce Williams, Chairman; Messrs. D. A. Baugh, A. H. Bernstein, D. M. Davidson, E. W. Fox, H. E. Guerlac, C. A. Holmes, J. J. John, M. G. Kammen, S. L. Kaplan, H. G. Koenigsberger, D. C. LaCapra, W. F. LaFeber, Miss M. B. Norton, Messrs. C. A. Peterson, W. M. Pintner, R. Polenber, W. B. Provine, J. H. Silbey, F. Somkin, B. Tierney, M. Walker, O. W. Wolters, D. K. Wyatt.

For admission to the history major a student must have completed an Introduction to Western Civilization, and have earned grades of C or better in this and in any other history courses taken. Students who have completed only the first semester of the Introduction to Western Civilization, with a grade of C or better, may be provisionally admitted to the major. Prospective majors should apply for admission at the Department of History office.

In fulfillment of the major requirement a student must take twenty-eight hours of history courses numbered 200 or above. Of the twenty-eight hours, sixteen must be in courses numbered above 330, and, of these sixteen, eight must be in one particular field of history (e.g., American, ancient, Latin American, early modern European). To complete the major a student must also take two courses numbered 300 or above offered by other departments that relate to his eight-hour concentration in one particular field of history.

## The Honors Program

Candidates for the degree Bachelor of Arts with Honors in history should consult with Mr. Holmes during the spring term of their sophomore year and enroll in the Honors program. The minimum requirements for admission to candidacy for Honors are (1) a cumulative average of

B— or better in all courses; (2) a cumulative average of B or better in courses in the humanities and social sciences; (3) enrollment and outstanding performance in at least one history course before the spring term of the sophomore year.

An Honors candidate will take the history proseminar (History 399) during the fall semester of his junior year. In the spring he will take at least one advanced history course entailing frequent discussions and considerable writing under supervision. During the fall term of his senior year the candidate may register, if he wishes, for History 401 or 402 to explore the field of his prospective Honors essay. During the spring term of his senior year the candidate will register for a four-hour course in order to complete and prepare to defend his Honors essay and his general work in history (History 500).

The text of the Honors essay may not exceed sixty pages except by permission of the chairman of the Honors committee and the student's adviser. Two copies will be due during the penultimate week of April. One copy will be returned with the readers' comments. In May, each Honors candidate will be given a thirty-minute oral examination, administered by his major adviser and one or both of the essay readers. The examination will ordinarily be concerned with the broad field of the essay (e.g., Periclean Athens, seventeenth-century science, nineteenth-century France).

The purpose of the Honors program is to give unusually able students an opportunity to do independent work under close faculty supervision. The progression of special courses taken during the junior and senior years (from History 399 through 500) all may be counted toward the twenty-eight hours in history required of a major. Evidence to be considered in awarding the Bachelor of Arts with Honors in history will include (1) grades earned in all history and related courses; (2) readers' reports on the Honors essay; and (3) performance on the senior oral examination.

## Distribution Requirement

The Distribution requirement in history is satisfied by any one year course in history through courses at the 300 level. The following courses are open to freshmen: History 105–106, 206–205, 215–216, 303–304, 307–308, 309–310, 311–312, 319–320, 345–346, 376–377, 383–384.

## American History

**215–216 American History.** 215 fall term only; 216 spring term only. Credit three hours a term. First term not prerequisite to the second. T Th S 9:05. Fall term, Messrs. Silbey, Somkin, Miss Norton and staff. Spring term, Messrs. LaFeber, Polenber, and staff.

Several major topics will be considered each term, and different modes of historical inquiry will be used. The principal topics during the fall term will be authority, power, and rebellion in colonial and antebellum America. A primary purpose will be to give the student opportunities to make his own historical judgments and analyze those made by others. These aims will be pursued through weekly seminar work and frequent short essays. There will be one lecture and two discussion sessions each week.

Note: Freshmen may count either term or both toward satisfaction of the Freshman Seminars requirement. (For description of the Freshman Seminars Program see p. 29.)

**360 American Constitutional Development.** Spring term. Credit four hours. M W F 10:10. Miss Norton.

A study of the major themes of the constitutional history of the United States. Among the topics to be considered are:

the drafting of the Constitution, the Marshall and Taney courts, civil rights decisions of the 19th century, the doctrine of vested rights, and the Warren court.

**370 The United States in the Middle Period, 1815–1850.** Fall term. Credit four hours. T Th 10:10, third hour to be arranged. Mr. Silbey.

An analysis of American society from the end of the second war with England to the crisis of 1850 stressing the developing trends of nationalism and sectionalism, the rise and results of Jacksonian Democracy, and the internal tensions produced by physical growth and slavery.

**[372 The Origins of American Civilization.** Spring term. Credit four hours. M W F 10:10. Mr. Kammen. Not offered 1972–73.]

**[373–374 The Structure of American Political History.** Throughout the year. Credit four hours a term. History 373 is not prerequisite to History 374. T Th 10:10. Mr. Silbey. Not offered 1972–73.]

**375 The American Civil War and Reconstruction.** Spring term. Credit four hours. T Th 10:10. Third hour to be arranged. Mr. Silbey.

An analysis of the factors leading up to the breakup of the Union, the impact of the war in North and South, and the problems of restoration and reconstruction of the seceded states.

**376–377 American Cultural and Intellectual History.**

376 fall term only; 377 spring term only. Credit four hours a term. First term not prerequisite to the second. M W F 2:30. Mr. Somkin.

History 376 deals with major American ideas down to the Civil War; topics include supernaturalism and rationalism, nationality and race, freedom and order, the individual and society, and the search for redemption and purification through reform movements such as temperance, women's rights, communitarianism, and antislavery. History 377 covers the impact of science on American culture and social thought from the post-war era to mid-twentieth century. Topics cover the development of originality and radicalism in American architecture, sociology, economics, psychology, religion, education, and law.

**[379 American History, 1890–1917.** Fall term. Credit four hours. T Th S 12:20. Mr. Polenber. Not offered in 1972–73.]

**380–381 Recent American History, 1917 to the Present.**

380 Fall term only; 381 Spring term only. Credit four hours a term. First term not prerequisite to the second. Lectures, T Th 12:20; discussion sections to be arranged. Mr. Polenber.

Fall term topics include progressivism and dissent in the First World War, cultural conflict in the 1920's, the social impact of the depression, Franklin Roosevelt and the New Deal. Spring term topics include domestic and diplomatic aspects of World War II, civil liberties and civil rights, social reform from the Fair Deal to the Great Society, critiques of the welfare state.

**383–384 History of American Foreign Relations.** 383

fall term only; 384 spring term only. Credit four hours a term. First term not prerequisite to the second. T Th S 11:15. Mr. LaFeber.

First semester surveys the 1750–1914 era; the second surveys 1914 to the present. Special emphasis is placed on the domestic, economic, political, and social changes and how these changes influenced the formulation of American foreign policy.

**468 Undergraduate Seminar in the History of the American South.** Spring term. Credit four hours. Pre-

requisite: consent of the instructor. T 3:35–5:30. Mr. Silbey. Topic for 1973: The Origins of the "Solid South" in American Politics, 1840–1896.

**469 Undergraduate Seminar in Early American History.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Th 1:25–3:20. Miss Norton.

Topic for 1973: Racism and sexism in early America. An examination of the status of women and blacks during the colonial and early national periods. Emphasis will be placed on the roles of slaves and wives in colonial social and economic life, attitudes of whites towards blacks and men towards women, and the relationship between the abolitionist and feminist movements after the American Revolution.

**[471 Problems in American Political History.** Spring term. Credit four hours. Prerequisite: consent of the instructor. T 2:34–4:25. Mr. Silbey.

A seminar investigating the nature of the American political process since 1789 through in-depth study of particular problems and episodes. Not offered in 1972–73.]

**[472 Undergraduate Seminar in American History.**

Spring term. Credit four hours. Prerequisite: consent of the instructor. W 1:25–3:15. Mr. Kammen. Not offered in 1972–73.]

**473 Age of the American Revolution, 1763–1815.** Fall

term. Credit four hours. T Th 1:25–3:00. Miss Norton. An examination of the process by which the thirteen English colonies became an independent and united nation, with emphasis on political thought and practice, social and economic change, and cultural development.

**[474 Nationalism and Nostalgia in American Life, 1870–1930.** Fall term. Credit four hours. M W 1:25–3:20. Consent of the instructor required. Mr. Kammen. Not offered in 1972–73.]

**[475 American Historiography in the Middle Period.**

Fall term. Credit four hours. W 1:25–3:20. Mr. Somkin. Not offered in 1972–73.]

**476 Undergraduate Seminar in American Cultural**

**History.** Spring term. Credit four hours. Limited enrollment; sign up in History department office. T 3:35–5:30. Mr. Somkin.

Topic for 1973: New Methods in American Studies. Recent approaches to the study of American civilization utilizing notions of myth, image, and concepts from social psychology will be examined. Emphasis will be upon the interpretation of the American reform tradition.

**[478 The American Reform Impulse.** Spring term. Credit four hours. Prerequisite: consent of the instructor. M 3:35 or hours to be arranged. Mr. Somkin. An undergraduate seminar. Not offered in 1972–73.]

**480 Undergraduate Seminar in Recent American**

**History.** Fall term. Credit four hours. Prerequisite: consent of the instructor. T 1:25–3:15. Mr. Polenber. Topic for 1972: Civil liberties in America, 1940–70.

**484 Motivations of American Foreign Policy.** Fall term.

Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged for classes on Tuesday and/or Thursday afternoons. Mr. LaFeber.

**Politics of Religion in America (Society for the Humanities Seminar 507–508).**

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**502 Colloquium in American History.** Fall term. Credit four hours. Required of all entering graduate students in American history. M 3:35–5:25. Staff.

**[669–670 Seminar in Early American History.** 669 fall term only; 670 spring term only. Credit four hours a term. Hours to be arranged. Mr. Kammen. Not offered in 1972–73.]

**673–674 Seminar in Nineteenth-Century American History.** 673 fall term only; 674 spring term only. Credit four hours a term. Hours to be arranged. Mr. Silbey.

**675-676 Seminar in American Cultural and Intellectual History.** 675 fall term only; 676 spring term only. Credit four hours a term. Hours to be arranged. Mr. Somkin.

**679-680 Seminar in Recent American History.** 679 fall term only; 680 spring term only. Credit four hours a term. Hours to be arranged. Mr. Polenber.

**683-684 Seminar in the History of American Foreign Relations.** 683 fall term only; 684 spring term only. Credit four hours a term. Hours to be arranged. Mr. LaFeber.

## Asian History

**205 Introduction to Asian Civilizations: Origins to 1600.** Spring term. Credit three hours a term. T Th 11:15; discussion sections to be arranged. Mr. Peterson and staff. Examination of central topics in the histories of China, Japan, India, and Southeast Asia, including indigenous beliefs and their development, often under outside influence; the political entities formed—their kinds and evolution; bases for social distinctions; relations with neighboring cultures; and general characteristics on the eve of extensive contact with the West.

**206 Introduction to Asian Civilizations: From 1600.** Fall term. Credit three hours a term, T Th 11:15; discussion sections to be arranged. Mr. Wyatt and staff. A survey of central themes in the modern histories of China, Japan, India, and Southeast Asia. After general consideration of the intrusion of European imperialism, the course focuses attention upon the intellectual, social, political, and economic transformations of the region prior to World War II, and the consequences which followed the war.

**393 History of Chinese Civilization prior to the Nineteenth Century.** Fall term. Credit four hours. Open to sophomores. Not open to students who have had History 323. T Th 10:10; discussion sections to be arranged. Mr. Peterson. Consideration of major issues in the history of China from earliest times to the late imperial period.

**394 History of Chinese Civilization: Nineteenth and Twentieth Centuries.** Spring term. Credit four hours. Open to sophomores. Not open to students who have had History 324. T Th 10:10; discussion sections to be arranged. An analysis of the modernization of Chinese civilization under the impact of the West. After a brief examination of early nineteenth-century China, the Western political, economic, and intellectual invasion is considered, followed by a more thorough study of the revolutionary changes that have taken place during this century.

**492 The Medieval Chinese World.** Spring term. Credit four hours. Prerequisite: History 323, 393, or consent of the instructor. T Th 1:25-3:00. Mr. Peterson. Analytic study of Chinese culture and society between the seventh and thirteenth centuries.

**495 Southeast Asian History to the Fourteenth Century.** Fall term. Credit four hours. T Th S 11:15.

**496 Southeast Asian History from the Fifteenth Century.** Spring term. Credit four hours. Prerequisite: History 206, 495 or consent of the instructor. M W F 10:10. Mr. Wyatt. An analytic survey of Southeast Asian states and societies and the changes which have transformed them. After a brief examination of the classical order of the fifteenth through seventeenth centuries, the course considers in depth the economic, intellectual, and political impact of the West in the eighteenth and nineteenth centuries and the search for meaningful modernization in the twentieth century.

**497 Undergraduate Seminar in Southeast Asia in the Nineteenth Century.** Fall term. Credit four hours. Prerequisite: History 496 or 206, or consent of the instructor. M 1:25-3:30. Mr. Wyatt. A seminar investigating the social and political dimensions of selected conflicts involving Southeast Asian states and Western powers, utilizing primary documents in translation. Topic for 1972: Burma, Siam, and the West, 1824-1893.

For complete descriptions of courses numbered 500 or above consult the graduate Field representative.

**588-589 The Historiography of Southeast Asia.** Throughout the year. Credit four hours a term. Prerequisite: consent of the instructors. Hours to be arranged. Mr. Wyatt.

**591 Chinese Historiography and Source Materials.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Peterson.

**593 Modernization of China.** Fall term. Credit four hours. A discussion seminar open to graduate students and to seniors who have completed History 324 or its equivalent with a grade of B or better. M 3:35-5:30.

**594 Modernization of China.** Spring term. Credit four hours. Prerequisite: History 593. M 3:35-5:30. A research seminar.

**691-692 Seminar in Medieval Chinese History.** Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Peterson.

**693-694 Seminar in Modern Chinese History.** Throughout the year. Credit four hours a term. Hours to be arranged.

**695-696 Seminar in Southeast Asian History.** Throughout the year. Credit four hours a term. Hours to be arranged. Fall term. Mr. Wyatt.

## European History

**105-106 Introduction to Western Civilization.** 105 fall term only; 106 spring term only. Credit three hours a term. First term prerequisite to the second except with consent of the instructor. M W F 9:05. Fall term, Mr. Bernstein and staff; spring term, Mr. Williams and staff. A survey of European history since antiquity. Attention is given equally to the major political and social developments and to the intellectual heritage of the West. A considerable portion of the reading is in contemporary sources. Freshmen may count either term or both toward satisfaction of the Freshman Seminars requirement. (For description of the Freshman Seminars Program, see p. 29.)

### Ancient European History

**[301 Ancient Greek History.** Spring term. Credit three hours. Open to freshmen. Two lectures and one discussion section per week. M W F 9:05. Mr. Bernstein. Not offered in 1972-73.]

**[431 The Roman Revolution, 146-44 B.C.** Fall term. Credit four hours. Prerequisite: History 302 or consent of the instructor. M W 1:25-3:20. Mr. Bernstein. Not offered in 1972-73.]

**[432 Early Imperial Rome, 44 B.C.-A.D. 70.** Spring term. Credit four hours. Prerequisite: History 302 or consent of the instructor. M W 3:35-5. Mr. Bernstein. Not offered in 1972-73.]

**[433 Classical Greece, 510-404 B.C.** Fall term. Credit four hours. Prerequisite: History 301 or consent of the instructor. M W 3:35-5. Mr. Bernstein. Not offered in 1972-73.]

**[434 Classical Greece, 404-338 B.C.** Spring term. Credit four hours. Prerequisite: History 301 or consent of



the instructor. M W 3:35–5. Mr. Bernstein. Not offered in 1972–73.]

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**[631–632 Seminar in Ancient Classical History.** Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Bernstein. Not offered in 1972–73.]

### Medieval and Early Modern History

**303–304 Medieval History.** 303 fall term only; 304 spring term only. Credit three hours a term. First term not prerequisite to the second. T Th 3:00–4:15. Mr. Tierney. A survey of the main trends of political, economic, intellectual, and religious development in Europe, from the fourth to the twelfth century in the fall term, and from the twelfth to the fifteenth century in the spring term.

**[335 Medieval Culture, 400–1150.** Spring term. Credit four hours. Prerequisite: History 303 or consent of the instructor. T Th 1:25–2:40. Mr. John. Not offered in 1972–73.]

**[336 Medieval Culture, 1150–1300.** Spring term. Credit four hours. Prerequisite: History 304 or consent of the instructor. T Th 1:25–2:40. Mr. John. Not offered in 1972–73.]

**341–342 Europe in the Age of the Renaissance, Reformation, and Counter-Reformation.** 341, fall term only; 342, spring term only. Credit four hours. Prerequisite: six hours in European history or consent of the instructor. M W F 11:15. Mr. Koenigsberger.

**[437 Church and State during the Middle Ages.** Fall term. Credit four hours. Prerequisite: History 303–304 or consent of the instructor. T Th 3:00–4:15. Mr. Tierney. Not offered in 1972–73.]

**440 The Spanish Empire and the Revolt of the Netherlands.** Spring term. Credit four hours. Prerequisites: six hours of European history and consent of the instructor. M W F 9:05. Mr. Koenigsberger.

**463 Undergraduate Seminar on Religion and Culture in the Middle Ages.** Fall term. Credit four hours. Prerequisite: History 303–304 or consent of the instructor. Open to undergraduates and graduate students. W 2:30. Mr. Tierney.

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**638 Seminar in Medieval History.** Spring term. Credit four hours. Hours to be arranged. Mr. Tierney.

**[639–640 Seminar in Latin Paleography.** Throughout the year. Credit four hours a term. Hours to be arranged. Mr. John. Not offered in 1972–73.]

**641 Graduate Seminar: Renaissance and Baroque Cities.** Fall term. Credit four hours. Hours to be arranged. Mr. Koenigsberger.

A comparative study of the economic, social, political, cultural, and architectural history of European cities from the fifteenth to the eighteenth centuries.

### Modern European History

**307 English History from Anglo-Saxon Times to the Revolution of 1688.** Fall term. Credit three hours. M W F 11:15. Mr. Holmes.

A survey of the government, social organization, and cultural and religious experience of the English people in the period, laying particular stress on the administrative and legal unification of the realm, the rise of representative institutions, and changes in agrarian organization and the development of urban and commercial classes.

**308 English History from the Revolution of 1688 to the Present.** Spring term. Credit three hours. M W F 11:15. Mr. Baugh.

The emphasis is on political, industrial, and social developments. The movement of English society from its eighteenth-century aristocratic base is traced through the liberal experiment of the nineteenth century to twentieth-century collectivism.

**309 Introduction to Russian History.** Fall term. Credit three hours. M W F 9:05. Mr. Pintner.

The origin and development of the autocratic state, its relationship to the major segments of the population and to the unique features of Russian culture are emphasized.

**310 Major Problems in Russian History.** Spring term. Credit four hours. History 309 is desirable but not required. M W F 9:05. Mr. Pintner.

An introductory course using a topical approach. Important problems in political, social, cultural, and economic history are studied in some detail using documentary material from both the Soviet and Tsarist periods, and in some cases comparing Russian developments with those in other countries. Written work and class discussion will be major features of the course.

**344 War, Trade and Empire, 1585–1815.** Spring term. Credit four hours. T Th S 10:10. Mr. Baugh.

Maritime enterprise, imperial policy, and naval power in the age of expansion. The accent is on English, French, and Dutch rivalry in the Atlantic and Caribbean.

**345–346 The Old Regime and the French Revolution.** 345 fall term only. 346 spring term only. Credit four hours a term. First term not required for enrollment in the second term. T Th 9:05 plus a discussion section to be arranged. Mr. Kaplan.

First term: a study of government and society from the latter part of the reign of Louis XIV through the age of Voltaire. Second term: an inquiry into the disintegration of the old regime and the nature of the revolutionary experience; the birth of a new nation and its world-wide impact.

**[347 English Constitutional History I to 1485.** Fall term. Credit four hours. Prerequisite: History 303–304, History 307, or consent of the instructor. T Th S 11:15. Not offered, 1972–73.]

**[348 English Constitutional History II since 1485.** Spring term. Credit four hours. Prerequisite: History 307–308, History 347, or consent of the instructor. T Th S 11:15. Not offered, 1972–73.]

**351 Europe in the Nineteenth Century.** Fall term. Credit four hours. Prerequisite: History 106 or consent of the instructor. W F 1:25–3:20. Mr. Fox.

A discussion course conducted at an advanced level, with emphasis on the impact of the industrial revolution on the political, social, and intellectual development of Europe.

**352 Europe in the Twentieth Century.** Spring term. Credit four hours. Prerequisite: History 106 or 351, or consent of the instructor. W F 1:25–3:30. Mr. Fox. A discussion course conducted at an advanced level with emphasis on the impact of major diplomatic and military confrontations on the political, social, and economic development of Europe.

**354 European Intellectual History in the Nineteenth and Twentieth Centuries.** Spring term. Credit four hours. M W F 12:20. Mr. LaCapra.

The focus is on social and cultural thought in France, England, and Germany. A central concern is the relation of theories and ideologies to individual biography, social history, and philosophy. Topics include reactions to the French Revolution and industrialization; the definition of conservative, liberal, and radical perspectives; literature and social thought; varieties of existentialism; the birth and development of the social sciences; psychoanalysis and post-Freudian psychology; linguistic philosophy; and

structuralism. Readings include Weber, Freud, Laing, Wittgenstein, Mann, Hesse, Camus, Sartre, and Lévi-Strauss.

**355-356 Modern German History.** Throughout the year. Credit four hours a term. First term not prerequisite to the second. T Th S 10:10. Mr. Walker.

Historical consciousness, and overcoming the past. In the fall term, a description of how German society and political traditions were formed, 1648-1848; in the spring term, the story of their encounter with industrialization, parliamentary government, and problems of world power, 1848 to the present.

**435 Population and History.** Spring term. Credit four hours. M 1:25-3:20. Mr. Kaplan (History), Mr. Marden (Sociology) and Mr. Tavuchis (Human Development and Family Studies).

An interdisciplinary seminar. An examination of the impact of the methodology and findings of demography on historical scholarship and the implications of historical research for the study of population. After an introduction to demographic analysis, the seminar will focus on the relationship of population to family and social structure, economic growth, political stability, health, manners and morals, etc.

**[443 Seminar on Eighteenth-Century French Social History.** Fall term. Credit four hours. Permission of instructor required. Hours to be arranged. Mr. Kaplan. Not offered in 1972-73.]

**[444 The Age of Enlightenment.** Spring term. Credit four hours. Prerequisite: six hours of European history. Th 2:00-4:30. Mr. Guerlac. Not offered in 1973.]

**447 The Politics of the Enlightenment.** Fall term. Credit four hours. T 2:00-4:30. Mr. Kaplan.  
An inquiry into the historical origins of European (especially French) political thought beginning in the 1680's at the zenith of Louis XIV's absolutism and culminating in the French Revolution a century later. Emphasis will be placed on the relationship of criticism and theory to actual social, economic, religious, and political conditions. An effort will be made to assess the impact of "enlightened" thought on the eighteenth century world and to weigh its implications for modern political discourse. Readings (all in English) from Bayle, Locke, Montesquieu, Voltaire, Rousseau, Hume, Diderot, Burke, and Paine as well as from the modern scholarly and polemical literature.

**[449 History of England under the Tudors and Stuarts.** Spring term. Credit four hours. M W 1:25-3:20. Mr. Holmes. Not offered in 1973.]

**[450 England since 1870.** Fall term. Credit four hours. Freshmen must obtain instructor's permission. M 1:25, W 1:25-3:20. Mr. Baugh. Not offered in 1972.]

**[451 The English Civil War, 1640-1660.** Spring term. Credit four hours. Prerequisite: History 449 or consent of the instructor. M W 1:25-3. Mr. Holmes. Not offered in 1972-73.]

**454 Topics in Modern European Intellectual History.** Spring term. Credit four hours. Prerequisite: consent of instructor. T 1:25-3:20. Mr. LaCapra.

**456 Undergraduate Seminar in German Problems in Historical Perspective.** Spring term. Credit four hours. Prerequisite: History 355 or 356 or consent of the instructor. Th 1:25-3:30. Mr. Walker.  
Persistent themes of German national life, examined first in their contemporary forms and traced then into the dimensions of earlier experience.

**[457 Undergraduate Seminar in the Government and Society in Seventeenth Century France.** Spring term. Credit four hours. No language requirement. Hours to be arranged. Mr. Kaplan. Not offered in 1973.]

**461 Undergraduate Seminar in Russian Social and Economic History.** Fall term. Credit four hours. Prerequisite: History 309 or 310 or consent of the instructor.

M 1:25-3:20. Mr. Pintner.

The interrelationship of the state, the social classes, and the economy is stressed. Topics will include: serfdom as a "successful" system of state support, and the problem of developing a viable alternative in the nineteenth and twentieth centuries. Students will be asked to compare Russian developments with those in other countries.

**[462 Undergraduate Seminar in Russian Foreign Relations.** Spring term. Credit four hours. Prerequisite: History 309 or 310 or consent of the instructor. M 2:30-4:25. Mr. Pintner. Not offered in 1973.]

**464 Undergraduate Seminar in Twentieth Century Russian History.** Spring term. Credit four hours. Prerequisite: History 309 or 310, or a course in another department dealing with Soviet Russia, or consent of the instructor. M 1:25-3:20. Mr. Pintner.

Several special topics will be examined in detail in an attempt to view modern Russian history as a process of continuing development rather than two distinct parts, Tsarist and Soviet. Possible topics include: the intellectual and the state, role of national minorities, the relationship of agriculture to industrialization, the maintenance of political authority.

**[467 Intellectual Currents of the Seventeenth Century.** Spring term. Credit four hours. Primarily for upperclassmen. Th 2-4:30. Mr. Guerlac. Not offered in 1972-73.]

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**553 Revolution in France, 1789-1848.** Fall term. Credit four hours. Prerequisite: consent of the instructor. A reading knowledge of French is desirable. Conducted as a seminar. T Th 3:35-5:30. Mr. Fox.

**551 The French Republic in the Twentieth Century.** Spring term. Credit four hours. Prerequisite: consent of the instructor. A reading knowledge of French is required. Conducted as a seminar. T Th 3:35-5:30. Mr. Fox.

**[645 Seminar in Eighteenth-Century British History.** Fall term. Credit four hours. Hours to be arranged. Mr. Baugh. Not offered in 1972.]

**646 Seminar in Nineteenth-Century British History.** Spring term. Credit four hours. Hours to be arranged. Mr. Baugh.

**647 Seminar in Tudor and Stuart History.** Fall term. Credit four hours a term. Hours to be arranged. Mr. Holmes.

**[650 Seminar in the French Revolution.** Spring term. Credit four hours. Reading knowledge of French and permission of the instructor required. Hours to be arranged. Mr. Kaplan. Not offered in 1973.]

**651-652 Seminar in Modern European History.** Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Fox.

**654 Seminar in Modern European Intellectual and Cultural History.** Spring term. Credit four hours a term. Hours to be arranged. Mr. LaCapra.

**657-658 Seminar in Modern German History.** Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Walker.

**661-662 Seminar in Russian History.** Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Pintner.

## History of Science

**311-312 Science in Western Civilization.** 311 fall term only; 312 spring term only. Credit three hours a term. Prerequisite: one year of college science. History 311 or consent of the instructor prerequisite to History 312. M W F 10:10. Fall term, Mr. Provine; Spring term,

Mr. Williams.

A survey of the development of science in its relation to the main currents of European and American civilization from classical antiquity to the present day.

**445 Problems in the History of Biology.** Fall term.

Credit four hours. M W 2–3:30. Mr. Provine.

History of the evolutionary hypothesis from earliest times to the present.

**446 Problems in the History of Biology.** Spring term.

Credit four hours. M W 2–3:30. Mr. Provine.

Topic: Biologists, race, and racism from Darwin to Jensen.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**655 Seminar in the History of Early Modern Science.**

Fall term. Credit four hours. Hours to be arranged.

Mr. Guerlac.

**[667–668 Seminar in the History of Science During the Nineteenth and Twentieth Centuries.**

Throughout the year. Credit four hours a term. Hours to be arranged. Mr. Williams. Not offered in 1972–73.]

## Latin American History

**[319 The Colonial Experience in Latin America.** Fall

term. Credit three hours. Open to sophomores. M W F 9:05. Mr. Davidson. Not offered in 1972–73.]

**[320 Latin American History in the Nineteenth and Twentieth Centuries.** Spring term. Credit three hours.

Open to sophomores. M W F 9:05. Mr. Davidson. Not offered in 1972–73.]

**487 Undergraduate Seminar in Slavery and Abolition in the Americas.** Fall term. Credit four hours. Prerequisite:

consent of the instructor. Th 1:25. Mr. Davidson.

A study of the rise, decline, and aftermath of slavery in the western hemisphere, centering on Latin America with comparative reference to the West Indies and southern United States.

**[488 Seminar in the History of Brazil.** Spring term.

Credit four hours. Prerequisite: consent of the instructor. Mr. Davidson. Th 1:25. Not offered in 1972–73.]

**489 Seminar in Latin American History.** Fall term.

Credit four hours. Prerequisite: consent of the instructor. T 1:25. Mr. Davidson.

Topic for 1972: The Mexican Revolution, 1910–1940.

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**687 Seminar in Latin American History.** Fall term.

Credit four hours. Open to graduate students and qualified undergraduates. Hours to be arranged. Mr. Davidson.

**688 Seminar in Latin American History.** Spring term.

Credit four hours. Open to graduate students and qualified undergraduates. Hours to be arranged. Mr. Davidson.

## Reading and Research Courses

**401 Supervised Reading.** Either term. Credit two hours.

Open only to seniors with grades of B– or better in virtually all courses in the humanities and social sciences. Prerequisite: consent of the instructor.

**402 Supervised Research.** Either term. Credit four hours.

Open only to seniors with grades of B– or better in virtually all courses in the humanities and social sciences. Prerequisite: consent of the instructor.

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**416 Quantitative Approaches in History.** Spring term.

Credit four hours. Th 2:30–4:25. Messrs. Kaplan and Silbey.

A seminar focussing on the application of quantitative techniques to specific problems in social and political history. The course will involve a laboratory experience in which each student will design and solve an individual computer-assisted research project, and intensive reading and evaluation of recent efforts to reexamine historical problems quantitatively. The aim of the course is not to develop statistical expertise but rather to explore new directions in historical studies.

**511–512 Supervised Reading.** Throughout the year.

Credit four hours a term. For graduate students only. Hours to be arranged. Staff.

## Honors Courses

**399 Honors Proseminar.** Fall term. Credit four hours.

Open only to juniors who have been accepted by the Department as candidates for Honors in history.

Th 1:25–3:20. Mr. Holmes.

An introduction to historical writing and modes of research, emphasizing the possibilities and limitations of historical inquiry.

**500 Honors Guidance.** Spring term. Credit four hours.

Prerequisite: History 399.

## Master of Arts in Teaching and Provisional Certification in Social Studies

Students interested in obtaining an M.A.T. degree or Provisional Certification in Social Studies should consult with Mr. Pintner. Space in the program is limited and application early in the spring term is advised.

The requirements of the M.A.T. program are: (1) A Bachelor of Arts or Bachelor of Science degree in a Social Science field. (2) At least twelve hours of courses in Education (which must include History 507); all of these hours may be obtained while working towards the degree at Cornell. (3) History 509 (Practice Teaching in Social Studies for M.A.T. candidates). (4) History 502 (Colloquium in American History). (5) Additional courses in Social Sciences, including seminar work at the graduate level, to complete the residence requirement of two regular semesters and one summer session term. The requirements of the Provisional Certification program are: (1) At least thirty-six hours in Social Science courses. (2) At least twelve hours of courses in Education (which must include History 507). (3) History 508 (Practice Teaching in Social Studies for Provisional Certification candidates).

**507 Methods of Teaching Social Studies.** Fall term,

during the 1972–1973 academic year. Credit four hours.

Hours to be arranged. Prerequisite: acceptance into the M.A.T. or Provisional Certification programs.

Mr. Pintner.

Registration for this course must occur during preregistration week of the Spring term of the previous academic year. This course cannot count as credit toward the History major, History minor or the distribution requirement.

**508 Practice Teaching in Social Studies—Provisional**

**Certification Candidates.** Spring term. Credit six hours.

Hours to be arranged. Prerequisite: History 507.

Mr. Pintner.

Registration for this course must occur during preregistration week of the spring term of the previous academic year. This course cannot count as credit toward the history major, history minor or the distribution requirement.

**509 Practice Teaching in Social Studies—M.A.T.**

**Candidates.** Spring term. Nine hours. Hours to be arranged. Prerequisite: History 507. Mr. Pintner.

## History of Art

Mr. S. J. O'Connor, Chairman; Messrs. T. M. Brown, R. G. Calkins; Mrs. Esther G. Dotson; Messrs. H. P. Kahn, T. W. Leavitt, H. Okun, A. Ramage, A. S. Roe, J. F. Scott, M. W. Young.

Students who wish to major in the history of art should plan to have completed two courses in the Department of the History of Art by the end of their sophomore year. Students who have taken only one course may petition to major in the Department if that course is at the 200 level or above and is completed with a grade of C or better. Students should also have completed the Distribution requirements, but exceptions will be considered upon petition to the Department chairman at the time of application to the major.

In their junior and senior years, students who are majoring shall work closely with their major advisers to determine acceptable programs of courses in the major field. Normally the program will include at least thirty additional hours of courses, of which twenty-four should be at the 300 or 400 level, chosen from those listed below, and a minimum of two additional courses in the Department or a related area approved by the major adviser. Courses at the 200 or 300 level taken in the Department during the freshman or sophomore years may be counted toward the major, providing such courses are in addition to the two courses offered in satisfaction of the prerequisite to the major. Students who are majoring are encouraged to take studio courses in painting and sculpture offered by the Department of Art in the College of Architecture, Art, and Planning, but such courses will be considered electives and cannot count toward the basic thirty hours normally required in the major.

## The Honors Program

In order to become a candidate for the degree of Bachelor of Arts with Honors in the History of Art, a student must have a cumulative average of B for all courses in the Department of the History of Art. Admission into the program requires the consent of the Department chairman during the spring term of the student's junior year. In his senior year the Honors candidate will include among his regular requirements Art History 493-494, involving the preparation of a senior thesis under faculty supervision.

## Distribution Requirement

The Distribution requirement in expressive arts is satisfied by a combination of any two courses at the 200 level or above.

## Freshman Seminar

**103 Freshman Seminar in Art History.** Either term. Credit three hours. Hours to be arranged. Staff. Offered in the Freshman Seminars Program and as a freshman elective but not in satisfaction of the Distribution requirement. For description see p. 31.

## Introductory Courses

The following courses are designed to introduce students to the processes and methods of art history by means of a systematic examination of a closely related body of visual material. The courses need not be taken in any particular sequence. One 200-level course is normally the prerequisite to courses at the 300 level.

**210 Introduction to Art History: Beginnings of Civilization.** Spring term. Credit three hours. T Th 10:10 and an

additional discussion section to be arranged. Mr. Scott. The role art played in the dawn of urban man as seen in the ancient Near East, especially the kingdom of Egypt and the city-states of Mesopotamia. Themes will be developed on the forms art takes at different stages of political organization, and relevant material from the early civilizations of Iran, Pakistan, and the Americas will be introduced for comparison.

**215 Introduction to Art History: Art of the Classical World. (Formerly History of Art 220.)** Spring term. Credit three hours. M W F 12:20. Mr. Ramage.

The evolution of the classical tradition of figurative art through the Hellenic and Hellenistic cultures from primitive beginning to mature realization; and its subsequent exploitation for the purposes of the world state of the Roman Empire until the triumph of Christianity.

**Introduction to Classical Archaeology (Classics 220).**

**[230 Introduction to Art History: Medieval Art.** Spring term. Credit three hours. T Th S 9:05. Mr. Calkins. Not offered in 1972-73.]

**240 Introduction to Art History: The Renaissance.** Spring term. Credit three hours. M W F 10:10 and an additional discussion section at one of the following times: M 1:25, 2:30, T 10:10, 3:35. Mrs. Dotson.

A study of selected works of architecture, sculpture, and painting of the fifteenth and sixteenth centuries in Italy and northern Europe and of selected major artists, notably Donatello, Jan van Eyck, Michelangelo, and Bruegel. Emphasis will be on the critical evaluation of various approaches to understanding the work of art and the Renaissance period. The function of artistic tradition and the meaning of artistic style; individuality in artistic invention; the impact of various forms of patronage; and relations of social, intellectual, and artistic currents of the Renaissance will be among the subjects discussed.

**[250 Introduction to Art History: The Baroque Era.** Fall term. Credit three hours. M W F 12:20. Mr. Roe. Not offered in 1972-73.]

**260 Introduction to Art History: Nineteenth-Century Art.** Fall term. Credit three hours. M W F 10:10. Mr. Okun.

The main focus in this course will be on European painting from Goya and David to Munch and Cezanne. Consideration will also be given to artists' intentions, definitions of art, and the social and cultural implications of the material.

**[270 Introduction to Art History: American Art of the Colonial Period and of the Nineteenth Century.** Fall term. Credit three hours. M W F 10:10. Mr. Roe. Not offered in 1972-73.]

**280 Introduction to Art History: Asian Traditions.** Fall term. Credit three hours. M W F 2:30. Mr. O'Connor.

Designed to introduce students to the varied responses of the Asian artist in differing times and geographical contexts, the course will include material on the Buddhist tradition, the Hindu temple, miniature paintings, Chinese Bronze Age art, and the development of Chinese landscape painting.

**290 Introduction to Art History: Architecture and Environment.** Fall term. Credit three hours. T Th S 12:20. Mr. Brown.

With emphasis on the social aspects of architecture in the nineteenth and twentieth centuries, an investigation of one of the oldest, most pervasive, and most influential facets of human environment. After a lengthy introduction to architectural elements—space, form, function, structure—the course will concentrate on the thoughts, attitudes, and forms that have influenced the physical shape of the modern world. Extensive reading will be offered in a variety of social, environmental, and esthetic works such as Le Corbusier, *Towards a New Architecture* (1923); Huxley, *Brave New World* (1932); Hall, *The Hidden Dimension*.



## Intermediate Courses

The following courses are intended primarily for upper-classmen and qualified sophomores, and all require as general prerequisite one course at the 200 level. Some of the courses have discussion sections.

**[313 Prehistoric Art.** Fall term. Credit four hours. M W F 9:05. Not offered in 1972-73.]

**314 Primitive Art.** Spring term. Credit four hours.

T Th S 12:20. Mr. Scott.

Traditional forms, types, and uses of tribal arts in Africa, the Pacific, and North America. A selective survey of the styles of West Africa, the Congo, Melanesia, Polynesia, and the American Indian, noting the role of masks, images, and ritual objects in both villages and courtly societies.

**315 Pre-Columbian Art.** Fall term. Credit four hours.

T Th S 10:10. Mr. Scott.

The evolution of the high cultures of the New World, from their beginnings in the second millennium B.C. to their abrupt termination at the Spanish conquest, is traced through regional styles of art and architecture. Emphasis will be on the two major foci of civilization—the Central Andes and the Mexican-Maya area.

### Aegean Art and Archaeology (Classics 319).

**322 Arts of the Roman Empire. (Formerly History of Art 432).** Fall term. Credit four hours. M W F 12:20.

Mr. Ramage.

The visual arts in the service of the first world state. The course starts with the Etruscan and Republican periods and ends with the conflict of styles in the early Christian period.

**332 Architecture of the Middle Ages.** Fall term. Credit four hours. M W F 11:15. Mr. Calkins.

A survey of the trends in architecture in Western Europe from the Late Antique Period through the Late Gothic, with emphasis on the Romanesque and Gothic.

**[333 Early Medieval Art and Architecture.** Fall term.

Credit four hours. T Th S 11:15. Mr. Calkins. Not offered in 1972-73.]

**[334 Romanesque Art and Architecture.** Spring term.

Credit four hours. T Th S 9:05. Mr. Calkins. Not offered in 1972-73.]

**[335 Gothic Art and Architecture.** Fall term. Credit four hours. T Th S 9:05. Mr. Calkins. Not offered in 1972-73.]

**[336 Medieval Italian Art.** Spring term. Credit four hours.

T Th S 11:15. Mr. Calkins. Not offered in 1972-73.]

**341 Flemish Painting.** Fall term. Credit four hours.

M W F 9:05. Mr. Calkins.

An investigation of the specific contributions of Netherlandish panel painting and manuscript illumination in the formation of a Northern Renaissance style in the fifteenth century. Special attention will be given to such major artists as Robert Campin, Jan van Eyck, Roger van der Weyden, and Jerome Bosch.

**[342 Medieval and Renaissance German Art.** Fall term.

Credit four hours. T Th S 11:15. Mr. Calkins. Not offered in 1972-73.]

**343 Italian Renaissance Art of the Fifteenth Century.**

Fall term. Credit four hours. M W F 11:15. Mr. Roe.

The development of the early Renaissance style in sculpture, painting, and architecture during the fifteenth century. Major masters and monuments will be considered within the context of the historical and intellectual trends which established this period as an era of artistic transition between medieval and modern time. The focus will be on Florentine art from the period of Ghiberti, Donatello, and Masaccio to its culmination at the end of the century with Botticelli and Leonardo da Vinci.

**344 Italian Renaissance Art of the Sixteenth Century.**

Spring term. Credit four hours. M W F 11:15. Mr. Roe.

The course will commence with a study of the culmination of the High Renaissance in Rome as exemplified primarily in the work of Raphael and Michelangelo. The emphasis will then shift to Venetian art, with full consideration of the artistic careers of the major masters: Giovanni Bellini, Giorgione, Titian, Tintoretto, and Veronese. This course will form a sequence with History of Art 343, but 343 is not a prerequisite.

**[349 Italian Renaissance Architecture.** Spring term.

Credit four hours. T Th S 9:05. Mr. Calkins. Not offered in 1972-73.]

**[354 Dutch Painting of the Seventeenth Century.** Spring

term. Credit four hours. M W F 10:10. Not offered in 1972-73.]

**[355 French Art of the Sixteenth and Seventeenth**

**Centuries.** Fall term. Credit four hours. T Th S 11:15. Mrs. Dotson. Not offered in 1972-73.]

**[357 European Art of the Eighteenth Century.** Fall term.

Credit four hours. T Th S 11:15. Mrs. Dotson. Not offered in 1972-73.]

**363 Modern Painting.** Spring term. Credit four hours.

M W F 11:15. Mr. Okun.

A study of the major developments in European and American painting and new two-dimensional media from Cubism to the present day. While principal focus of the course will be upon such major figures as Matisse, Picasso, Kandinsky, Klee, and Mondrian, equal emphasis will be given to the new visual points of view which have emerged since World War II.

**[367 Modern Architecture.** Fall term. Credit four hours.

It is assumed that students will have some background in nineteenth- and twentieth-century history, literature, and art. M W F 11:15. Mr. Brown. Not offered in 1972-73.]

**[378 American Architecture, the City, and American**

**Thought: 1850-1950.** Fall term. Credit four hours. T Th S 12:20. Mr. Brown. Not offered in 1972-73.]

**383 Art of China.** Fall term. Credit four hours.

M W F 10:10. Mr. Young.

Major monuments in the history of Chinese art, from the early bronzes through Buddhist sculpture, ceramic art, and early landscape paintings. The role of Buddhism, Taoism, and Confucianism in shaping the aesthetic expression of China will be discussed in detail. Although some attention will be given to painting, the lectures will concentrate on the earlier (Buddhist) periods. Ceramics and the so-called minor arts will be treated extensively in smaller discussion sections, utilizing the resources of the White Art Museum. Students interested primarily in Chinese painting should take History of Art 385.

**384 Art of Japan.** Fall term. Credit four hours. M W F

12:20. Mr. Young.

Painting, sculpture, and architecture from the Buddhist period through the development of national style to the modern age. Buddhist art and architecture will be discussed in some detail, but the lectures will concentrate on Medieval Japan, with special emphasis on Zen paintings, the arts of the tea ceremony and the garden, the grand decorative tradition, folk arts, and the later paintings and prints of the "floating world."

**[385 Chinese Painting.** Spring term. Credit four hours.

M 1:25-3:20 and an additional discussion hour to be arranged. Mr. Young. Not offered in 1972-73.]

**386 Studies in Indian and Southeast Asian Art.** Spring

term. Credit four hours. M W F 9:05. Mr. O'Connor.

The course will focus on major developments in Indian art: the Indus civilization, early Buddhist painting and sculpture, the Hindu temple and Rajput miniature painting.

Some monuments in Southeast Asia will also be examined with reference to the assimilation and adaptation of Indian traditions in the art of that region.

**[392 Latin American Art.** Spring term. Credit four hours. T Th S 12:20. Mr. Scott. Not offered in 1972-73.]

## Seminars

Courses at the 400 level are open to upperclassmen and majors; seminars at the 500 level are for qualified upperclassmen and graduate students. All seminars involve the writing and presentation of research papers. Enrollment is limited in this group of courses, and consent of the department or instructor is normally required. The 500-level courses with announced topics may be repeated.

**401 Independent Study.** Either term. Credit two hours. Prerequisite: consent of a Department member. Individual investigation and discussion on special topics not covered in the regular course offerings, by arrangement with various members of the Department. The course may be repeated.

**402 Independent Study.** Either term. Credit four hours. Prerequisite: consent of a Department member. Individual investigation and discussion on special topics not covered in the regular course offerings, by arrangement with various members of the Department. The course may be repeated.

**[405 Original Works of Art.** Spring term. Credit four hours. Prerequisite: at least four courses in the history of art and consent of the instructor. Enrollment limited to 12 students. Mr. Leavitt. Not offered in 1972-73.]

**411 Techniques and Materials: Painting.** Fall term. Credit four hours. Prerequisite: at least four courses in the history of art and consent of the instructor. History of art majors given first preference. Graduate auditors given second preference. Limited to 20 students. W 1:25-3:20 plus one work session to be arranged. Mr. Kahn. For majors and other advanced students, this course will deal with technical aspects of painting in the historical context. Included will be studies of traditional media employed by the old masters, conservation techniques, and laboratory exercises. Conducted as a seminar, with lectures, discussions, museum study, projects, and reports.

**[412 Techniques and Materials: Graphics.** Spring term. Credit four hours. Prerequisite: at least four courses in the history of art and consent of the instructor. History of art majors given first preference. Graduate auditors given second preference. Limited to 20 students. W 1:25-3:20 plus one work session to be arranged. Mr. Kahn. Not offered in 1972-73.]

**413 Books, Prints, and the Graphic Image.** Spring term. Credit four hours. Prerequisite: at least four courses in the history of art and consent of the instructor. History of art majors given first preference. Graduate auditors given second preference. Limited to 20 students. W 1:25-3:20 plus one work session to be arranged. Mr. Kahn. The relation of letter forms, printed pages, and books to graphic images; through the history of type, books, and the graphic media to our own time.

**[415 Seminar in Pre-Columbian Art.** Fall term. Credit four hours. Prerequisite: History of Art 315 or consent of instructor. Th 1:25-3:20. Mr. Scott. Not offered in 1972-73.]

**[431 Greek Sculpture.** Spring term. Credit four hours. Prerequisite: consent of instructor. Not offered in 1972-73.]

**444 European Decorative Arts of the Seventeenth and Eighteenth Centuries.** Spring term. Credit four hours. Prerequisite: two or more courses in the history of art at the introductory or intermediate level, and consent of the instructor. W 1:25-3:20. Mr. Roe.

Major trends in the decorative arts of the Baroque and Rococo periods, with emphasis upon the evolution of styles in France and England (there will also be some consideration of Colonial American arts in relationship to their English heritage). The forms of the period will be traced to their antecedents in the art of Renaissance Italy, and the avenues of their dissemination to other European centers will be discussed. In addition to furniture, there will be consideration of silver, ceramics, and of illustrated design books influential in the development of the decorative arts. Open to qualified majors and to graduate students. Lectures, discussion, and reports.

**[448 Mannerism and the Early Baroque in Italy.** Spring term. Credit four hours. M 2:30-4:25. Mrs. Dotson. Not offered in 1972-73.]

**452 Studies in English Art. (Formerly History of Art 552.)** Fall term. Credit four hours. Prerequisite: previous intermediate-level courses in European art or in English literature, and consent of the instructor. Enrollment limited to fifteen students. W 1:25-3:20. Mr. Roe. Topic for 1972-73: The art and literary work of William Blake. Key works of Blake will be read as a guide to the interpretation of his visual symbolism. Blake's influence upon his immediate followers will also be considered. Lectures, discussion, and reports. Open to seniors majoring in the arts or in literature, and also to graduate students.

**[458 Classic and Romantic Art.** Spring term. Credit four hours. Th 1:25-3:20. Mrs. Dotson. Not offered in 1972-73.]

**462 Art and Technology: 1850-1950.** Spring term. Credit four hours. Prerequisite: History of Art 260, 290, 363, 367, or equivalents, or consent of instructor. Enrollment limited to 25 students. T 11:15-1:10, Th 11:15. Mr. Brown. Approached topically and not as a survey, the response of painting, sculpture, photography, architecture, and industrial design to a developing mass-technological world; emphasis on "interpretation," rather than "coverage" of material. The changing conditions, forms, and content of the visual arts, examined within the framework of topics such as "changing definitions of art," "use and form," "a machine esthetic," "art or technology: false alternatives." Extensive reading, ranging from Thoreau's *Walden* (1854) to Jarrell's *A Sad Heart at the Supermarket* (1960); Kandinsky's *The Spiritual in Art* (1912) to Gropius' *The New Architecture and the Bauhaus* (1934).

**[472 Romanticism in Painting.** Spring term. Credit four hours. Mr. Leavitt. Not offered in 1972-73.]

**[481 Masters of Japanese Prints.** Fall term. Credit four hours. M 1:25-3:20. Mr. Young. Not offered in 1972-73.]

**[482 Ceramic Art of Asia.** Fall term. Credit four hours. M 1:25-3:20. Mr. O'Connor. Not offered in 1972-73.]

**483 Studies in Buddhist Art. (Formerly History of Art 381.)** Spring term. Credit four hours. Prerequisite: consent of the instructor. T 1:25-3:20. Mr. O'Connor. Studies of the arts in the service of Buddhism. The development and spread of characteristic types of Buddhist art will be examined in relation to major currents of Buddhist thought. Lectures, discussion, and individual reports.

**[488 Traditional Arts in Southeast Asia.** Spring term. Credit four hours. W 1:25-3:20. Mr. O'Connor. Not offered in 1972-73.]

**493 Honors Work.** Fall term. Credit four hours. S-U grades only. Hours to be arranged. Intended for seniors who have been admitted to the Honors program. Basic methods of art historical research will be discussed and individual readings assigned leading to the selection of an appropriate thesis topic.

**494 Honors Work.** Spring term. Credit four hours. Prerequisite: History of Art 493.

The individual student, under faculty direction, will prepare a senior thesis.

**[510 Seminar in Latin American Art.** Fall term. Credit four hours. W 1:25–3:20. Mr. Scott. Not offered in 1972–73.]

**[531 Problems in Medieval Art and Architecture.** Spring term. Credit four hours. Prerequisite: consent of the instructor. T 1:25–3:20. Mr. Calkins. Not offered in 1972–73.]

**[548 Studies in Italian Renaissance Art.** Fall term. Credit four hours. Prerequisite: a course in Renaissance art and consent of the instructor. Th 1:25–3:20. Mr. Roe. Not offered in 1972–73.]

**564 Problems in Twentieth-Century Art.** Fall term. Credit four hours. Prerequisite: consent of the instructor. M 1:25–3:20. Mr. Okun.  
Topic to be announced.

**565 Problems in Modern Art and Architecture.** Spring term. Credit four hours. Prerequisite: consent of the instructor. M 1:25–3:20. Mr. Brown.  
Topic to be announced.

**[580 Problems in Asian Art.** Fall term. Credit four hours. T 1:25–3:20. Not offered in 1972–73.]

**[584 Problems in Chinese Art.** Spring term. Credit four hours. Prerequisite: consent of the instructor. W 1:25–3:20. Mr. Young. Not offered in 1972–73.]

**[586 Studies in Chinese Painting.** Spring term. Credit four hours. Prerequisite: History of Art 383 and consent of the instructor. W 1:25–3:20. Mr. Young. Not offered in 1972–73.]

**591–592 Supervised Reading.** 591 fall term only; 592 spring term only. Credit four hours, but may be taken more than once in the same term. For graduate students only.

**595 Methodology Seminar.** To be offered when there is sufficient demand. Credit four hours. Restricted to and required of all graduate students. Staff.

## Archaeology

Students who are interested in archaeology are directed especially to History of Art 315 and 488, both of which include archaeological material. The following specialized courses treat specific excavational material and procedures, and are therefore open only to a limited number of students who have some background in ancient history, ancient languages, anthropology, or art history.

**[521 Numismatics.** Fall term. Credit four hours. Prerequisite: consent of the instructor. T 1:25–3:20. Not offered in 1972–73.]

**[523 Ceramics.** Fall term. Credit four hours. Prerequisite: consent of the instructor. T 1:25–3:20. Not offered in 1972–73.]

## Italian

For complete course listings and for details of the major, see the heading "Italian" in the section Modern Foreign Languages and Literatures.

## Mathematics

Mr. W. H. J. Fuchs, Chairman; Messrs. I. Berstein, J. H. Bramble, K. S. Brown, L. D. Brown, S. U. Chase, M. M. Cohen, R. Connelly, G. E. Cooke, R. K. Dennis, C. J. Earle, R. H. Farrell, N. J. Friedman, S. S. Gelbart, L. Gross, R. S. Hamilton, D. W. Henderson, K. Ito, A. V. Jategaonkar, P. J. Kahn, H. Kesten, J. C. Kiefer, A. W. Knapp, S. Lichtenbaum, G. R. Livesay, M. D. Morley,

A. Nerode, P. Olum, L. E. Payne, R. A. Platek, G. S. Rinehart, A. Rosenberg, O. S. Rothaus, A. H. Schatz, R. B. Schneider, S. Sen, D. A. Singer, F. L. Spitzer, R. S. Strichartz, M. E. Sweedler, A. Torchinsky, R. J. Walker, H. C. Wang, W. C. Waterhouse, J. E. West.

At all times a student at Cornell is urged to take the most advanced mathematics course for which he is prepared. Members of the Department are always available to discuss with students the appropriate courses for their levels of ability and interest, and students are urged to avail themselves of this help.

Much time may be saved by a careful reading of this *Announcement*.

Students wishing to take any of the courses numbered 300 or above are invited to confer, before registering, with the instructor concerned.

Subject matter of courses is indicated by the second digit thus: 0, general; 1, 2, analysis; 3, 4, algebra; 5, 6, geometry; 7, probability and statistics; 8, logic; 9, other. The level of a course is indicated by the first digit of the course number: Roughly 1, 2, indicate underclass courses; 3, 4, upperclass courses; 5, 6, graduate courses.

In all 600-level courses, as well as in course 515, the final grades will be only S or U with the exception of 690.

## Advanced Placement

Secondary school students are strongly urged to take one of the two Advanced Placement Examinations of the College Entrance Examination Board in their senior year. In addition, there will be a placement examination in mathematics offered at Cornell just before the beginning of classes in the fall which some students should take. It is most important that anyone with any knowledge of calculus read carefully the relevant portion of the section on Advanced Placement at the beginning of this *Announcement*.

## Major Options

There are three options available for students intending to major in mathematics; the respective minimum requirements are listed below. In each case, a student will be accepted as a major by the Department only if he can reasonably be expected to have satisfied the prerequisite to his option by the end of the term in which he applies for admission to the major. This acceptance is contingent upon actual fulfillment of the prerequisites.

### Option I.

This option includes all prospective Honors candidates and all students who contemplate an eventual Ph.D. in pure or applied mathematics. Prerequisite: course 221–222. Requirements: (a) 411–412, (b) 431–432, (c) at least twelve additional hours of mathematics courses numbered 300 or above, other than 313, 315, 370; Computer Science 421, 422 may be included in these twelve hours.

The Department strongly recommends that all prospective Option I majors take Physics 112 and 213 or 207–208 in their freshman year. Those interested in the applications of mathematics should certainly do so and should also seriously consider the offerings in differential equations, probability and statistics, and numerical analysis.

### Option II.

This option includes those mainly interested in the application of mathematics who do not contemplate an eventual Ph.D. in mathematics or applied mathematics. It will not prepare a student for work at the Ph.D. level in the theoretical side of even such applied areas as statistics,

numerical analysis, etc. Prerequisites: (a) 221–222; (b) Physics 207–208 or 112 and 213. Requirements: (a) 421, 422; (b) 431, and either 332 or 432; (c) Computer Science 202; (d) an approved eight-hour sequence in statistics, numerical analysis (in the Department of Computer Science), or differential equations; (e) at least eight additional hours of courses numbered 300 or above in mathematics, computer science, or a physical science not including Mathematics 313, 315, 370, nor Computer Science 311.

An alternate version of Option II is available for those specifically interested in computer science. Prerequisites: (a) 221–222; (b) Computer Science 202. Requirements: (a) 411–412 or 421–422; (b) 431 and either 332 or 432; (c) Computer Science 401, 409, 385 or 485–486, 222 or 421–422. One of the sequences 485–486 or 421–422 must be included.

### Option III.

This option is for prospective secondary school teachers and others who wish to major in mathematics but do not intend to become professional mathematicians, e.g., pre-medical and prelaw students. It does not prepare a student for graduate work in mathematics. Prerequisites: (a) 222 or (a') 213 and either 331 or 332; (b) Physics 101–102, or 207–208. Mathematics requirements: (a) 311 and 315; (b) 331 if 221 has not been taken, 332; (c) 451; (d) Computer Science 202; and either (e) 452 and four additional hours of mathematics courses numbered above 300 plus Mathematics 130 and 140 and one course in education (Mathematics 370 is recommended but not required) or (e') 312 or 452 and eight additional hours of mathematics courses numbered above 300.

## The Honors Program

The requirements for Honors in mathematics are: (1) satisfaction of the requirements of Option I at a high level of performance; (2) satisfactory performance in the Honors Seminar 401; and (3) satisfactory performance on an oral examination. (A knowledge of the material of 421, 422 will be required for this examination.)

## Distribution Requirement

The Distribution requirement in mathematics is satisfied with any six hours in mathematics, not including more than one course from among 105, 107, 303; or by the sequence Computer Science 201 and Electrical Engineering 4110 (College of Engineering).

## Graduate Courses

For complete descriptions of courses numbered 500 and above, see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

## General Courses

Students wanting a general introductory mathematics course are advised to take 107–108. (See description below.)

**130 Practice Teaching in Mathematics.** Either term. Credit six hours. Time to be arranged. Students will not be permitted to take more than two additional courses while they are teaching.

**140 Methods of Teaching Mathematics.** Fall term. Credit three hours. Times to be arranged. Mr. Holman. A discussion of methods of teaching mathematics at the high school level.

**303 History of Mathematics.** Spring term. Credit three hours. Prerequisite: One term of calculus. M W F 11:15. A review of the history of mathematics from antiquity to the present. An attempt will be made to enter into the atmosphere of each period in order to appreciate the meaning of mathematics for that era.

**401 Honors Seminar.** Fall term. Credit four hours. Prerequisite: provisional acceptance as a candidate for Honors. Hours to be arranged. Students will discuss selected topics under the guidance of one or more members of the staff. This seminar is required for Honors in mathematics.

**690 Supervised Reading and Research.** Variable credit.

## Basic Sequences

College algebra and trigonometry are taught in Orientation 5 and 110, offered by the College of Agriculture and Life Sciences.

There are two sequences in elementary calculus and several special purpose sequences. The two elementary calculus sequences have 111 in common. The upper sequence continues with 122, 221, and 222, while the standard sequence continues with 112 and 213. Students who desire to take advanced courses in theoretical mathematics should take the upper sequence, which is prerequisite to most of them. A student whose performance in 112 has been exceptional can be admitted into 221. A student in the standard sequence who wants the linear algebra material of 221 may obtain it in 331.

The special purpose sequences are 105–106, 107–108, and 191–192–293–294. The latter is primarily for engineers and prospective physics majors. Note that there are honors versions of the courses in this sequence. (Physics majors who desire an appropriate version of the upper sequence described above should take 193–122–221–222.) Mathematics 107–108 is intended primarily for students in the more descriptive areas of the biological and social sciences, and will normally be terminal. Students who take Orientation 110 are advised to take 107–108 rather than 111. Mathematics 107 treats finite mathematics, and 108 gives an introduction to the calculus; 108 may be taken without 107, and is preferable to 111 for students desiring only one semester of calculus. Mathematics 105–106 is intended for biology students and is similar to 107–108 but treats more topics and gives an introduction to computing. Students interested in the more analytical aspects of biology, such as biochemistry, and all those wanting to take mathematics courses beyond the first semester of calculus, are advised to begin with 111. Those who start off in 105 or 107 and then discover that they are in this category should take 111 in place of 106 or 108. A student who makes this discovery after beginning 106 or 108 should consult the mathematics department or his adviser. He may enter 112 if he does very well in 108; and, in exceptional circumstances, he may follow 106 with 213, provided he makes up some missing material on his own.

Students cannot receive credit for both 105 and 107. Nor can they receive credit for more than one of 106, 108, 111.

**105–106 Finite Mathematics and Calculus for Biologists.** 105 fall term; 106 spring term. Credit four hours a term. Prerequisite: three years of high school mathematics, including trigonometry. Fall term: lectures T Th 12:20 plus two hours to be arranged. Spring term: lectures T Th 12:20. Preliminary examinations will be held at 7:30 p.m. on September 28, October 26, November 30; February 15, March 15, April 26.

Models, analytic geometry, difference equations, elementary linear algebra, probability, introduction to the calculus, partial derivatives, elementary differential equations, and introduction to interactive computing. Examples from biology will be used throughout the course.



**107 Finite Mathematics for the Biological and Social Sciences.** Either term. Credit three hours. Prerequisite: three years of high school mathematics, including trigonometry. Fall term: lectures T Th 11:15, 12:20 plus two hours to be arranged. Spring term: T Th 12:20 plus two hours to be arranged. Preliminary examinations will be held at 7:30 p.m. on September 28, October 26, November 30; February 15, March 15, April 26. Logic and set theory, probability, vectors and matrices, linear programming, functions and graphs.

**108 Calculus with Applications to the Biological and Social Sciences.** Either term. Credit three hours. Prerequisite: 107 or three years of high school mathematics, including trigonometry and analytic geometry of the line and circle. Fall term: T Th 12:20 plus two hours to be arranged. Spring term: T Th 11:15, 12:20 plus two hours to be arranged. Preliminary examinations will be held at 7:30 p.m. on September 28, October 26, November 30; February 15, March 15, April 26. Behavior of functions, introduction to differential and integral calculus, elementary differential equations.

**111 Calculus.** Either term. Credit three hours. Prerequisite: three years of high school mathematics, including trigonometry. Fall term: lectures, T Th 11:15, 12:20 plus one hour to be arranged. Spring term: lectures T Th 12:20 plus one hour to be arranged. To complete this course, students must pass tests for which they present themselves at a time of their own choosing. For details inquire at the Mathematics Department. Plane analytic geometry, differentiation and integration of algebraic and trigonometric functions, applications.

**112 Calculus.** Either term. Credit three hours. Prerequisite: 106, 111, or, exceptionally, 108. Fall term: lectures, T Th 12:20 plus one hour to be arranged. Spring term: lectures, T Th 11:15, 12:20 plus one hour to be arranged. This course is conducted along the same lines as Mathematics 111. Differentiation and integration of elementary transcendental functions, the technique of integration, polar coordinates, partial differentiation, introduction to multiple integration, power series.

**213 Calculus.** Either term. Credit three hours. Prerequisite: 112 (122 is not a satisfactory prerequisite for this course). Fall term: lectures, T Th 12:20 plus one hour to be arranged. Spring term: M W F 8, 9:05. In the fall term this course is conducted along the same lines as 111. Students wishing to change to the standard sequence may find 192 an appropriate sequel to 122, although some material will thus be covered twice.

**122 Calculus.** Either term. Credit three hours. Prerequisite: performance at a high level in 111. For fall term, admission by consent of the Department. Fall term: M W F 10:10, 11:15; T Th S 9:05. Spring term: M W F 9:05, 11:15. Differentiation and integration of elementary transcendental functions, the technique of integration, polar coordinates, and infinite series. The approach is more theoretical than in 112.

**221 Calculus.** Either term. Credit four hours. Prerequisite: grade of B or better in 122 or exceptional performance in 112 and consent of the instructor. Fall term: M W F 10:10, 11:15. Spring term: T Th S 9:05, 10:10, 11:15. Linear algebra and differential equations. Topics include vector algebra, linear transformations, matrices, linear differential equations.

**222 Calculus.** Either term. Credit four hours. Prerequisite: 221. Fall term: M W F 9:05. Spring term: T Th S 9:05, 10:10, 11:15. Vector differential calculus, calculus of functions of several variables, multiple integrals.

**221H-222H Calculus.** Honors section of 221-222. Either may be taken either term. Credit two hours a term. Pre-

requisite: consent of the instructor. Open only to students simultaneously registered in 411-412. Hours to be arranged.

**191 Calculus for Engineers.** Either term. Credit four hours. Prerequisite: three years of high school mathematics, including trigonometry. Fall term: lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Spring term: M W F S 9:05. Preliminary examinations will be held at 7:30 p.m. on September 20, October 11, November 1, November 29. Plane analytic geometry, differential and integral calculus, and applications.

**193 Calculus for Engineers.** Fall term. Credit four hours. Prerequisite: four years of high school mathematics, including trigonometry and calculus. Lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on September 20, October 11, November 1, November 29. Covers contents of 191 in more detail, including more theoretical material.

**192 Calculus for Engineers.** Either term. Credit four hours. Prerequisite: 191 or 193. Lectures, M W F 9:05, 11:15, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on September 20, October 11, November 1, November 29; February 14, March 7, April 4, April 25. Transcendental functions, technique of integration and multiple integrals, vector calculus, analytic geometry in space, partial differentiation, applications.

**194 Calculus for Engineers.** Spring term. Credit four hours. Prerequisite: recommendation of the lecturer in course 191 or course 193. Lectures, M W F 9:05, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on February 14, March 7, April 4, April 25. Covers contents of 192 in more detail and includes more theoretical material.

**293-293H Engineering Mathematics.** Either term. Credit four hours. Prerequisite: 192 or 194. Lectures M W F 8, 12:20, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on October 3, October 31, December 5; February 20, April 3, May 1. 293H is an Honors section given in the fall term only, lectures, M W F 8. Vectors and matrices, first-order differential equations, infinite series, complex numbers, applications. Problems for programming and running on the automatic computer will be assigned, and students are expected to have a knowledge of computer programming equivalent to that taught in Engineering 104.

**294-294H Engineering Mathematics.** Either term. Credit three hours. Prerequisite: 293. Lectures, M W 8, 12:20, plus recitation periods to be arranged. Preliminary examinations will be held at 7:30 p.m. on October 3, October 31, December 5; February 20, April 3, May 1. 294H is an Honors section given in the spring term only, lectures, M W 8. Linear differential equations, quadratic forms and eigenvalues, differential vector calculus, and applications.

## Applied Mathematics and Differential Equations

**305 Mathematics in the Real World.** Spring term. Credit three hours. Prerequisite: 213 (or 221); coregistration in 331, 315, or 422 might be useful. Lectures, T Th 9:05. Mr. Fisher. The interplay of mathematics with other disciplines will be explored. Special problems in the physical sciences, physics, chemistry, and biology, in engineering and in the social sciences will be selected to illustrate the formulation of appropriate mathematical models and their solution by

exact and approximate mathematical methods, including the development of the necessary mathematical ideas and corresponding scientific concepts and analogies. Mathematical techniques to be introduced (at an elementary level) may include linear algebra, matrices and eigenvalues, formal Laplace and Fourier transforms, probability theory including random walks, inequalities and convexity, graph theory, Padé approximants, and perturbation procedures.

**315 Higher Calculus.** Spring term. Credit three hours. Prerequisite: 213. M W F 9:05.

Intended for students who have had only three semesters of calculus. It does not prepare for 415–416, and will not meet the needs of those graduate students whose work requires really serious application of mathematical methods. Vector analysis. Elements of complex variable. Ordinary and partial differential equations. Fourier series. Special functions. Laplace transforms. Emphasis is placed on a wide range of formal applications of the calculus rather than on the logical development.

**415–416 Mathematical Methods in Physics.** 415 fall term only; 416 spring term only. Credit four hours a term. Intended for graduate students in physics or related fields who have had a strong advanced calculus course and at least two years of general physics. The course goes very quickly, covering in two semesters slightly more than 421–422–423. Undergraduates will be admitted only with consent of the instructor. First term prerequisite to the second. T W Th F 12:20.

Lectures and problem work designed to give a working knowledge of the principal mathematical methods used in advanced physics. Topics include a brief discussion of some basic notions: metric space, vector space, linearity, continuity, integration. Generalized functions (Schwartz distributions). Fourier series and Fourier integrals. Elementary complex variable. Saddle point method. Linear transformations in finite and in infinite-dimensional spaces. Matrices. Differential operators and integral operators, the equations and eigenvalue problems connected with them and the special functions arising from them. Elements of group theory. The rotation group and its representations.

**421 Applicable Mathematics.** Either term. Credit four hours. Prerequisite: 222 or 294 at a high level of performance or 213 and 331 at a high level of performance. T W Th F 12:20.

Graduate students who need mathematics extensively in their work and who have had a solid advanced calculus course as undergraduates should take 415–416. If they have not had such an advanced calculus course they should take 421–422–423. If their preparation is still too weak for this, they should take all or part of 221–222, followed by 421–422–423.

Theorems of Stokes, Green, Gauss, etc. Sequences and infinite series. Fourier series and orthogonal functions. ordinary and partial differential equations.

**422 Applicable Mathematics.** Spring term. Credit four hours. Prerequisite: 421. T W Th F 12:20. Complex variables. Generalized functions. Fourier and Laplace transforms. Probability and statistics.

**423 Applicable Mathematics.** Fall term. Credit four hours. Prerequisite: 421. T W Th F 12:20. Linear operators and integral equations. Calculus of variations. Application to eigenvalue problems. Green's function, and treatment of special problems of mathematical physics.

**427 Introduction to Ordinary Differential Equations.** Fall term. Credit four hours. Prerequisite: 222 or 294 or consent of instructor. M W F 9:05. This course covers the basic existence, uniqueness and stability theory together with methods of solution and methods of approximation. Topics include singular points,

series solutions, Sturm-Liouville theory, transform methods, approximation methods, and application to physical problems.

**428 Introduction to Partial Differential Equations.**

Spring term. Credit four hours. Prerequisite: 222 or 294 or consent of instructor. M W F 9:05.

Primarily a study of the Laplace, heat, and wave equations. Topics include maximum principles, existence, uniqueness, stability, Fourier series methods, approximation methods, and applications.

## Analysis

**311 Elementary Analysis.** Fall term. Credit four hours. Prerequisite: 213. T Th S 10:10.

A careful study of the topology of the real line. Functions. Theory of continuous functions of one real variable. Differentiation and integration of such functions. Series and sequences. The material of 311–312 is similar to that of 411–412 below, but is taught at a more elementary level and at a slower pace. A student may not receive credit for both 311–312 and 411–412.

**312 Elementary Analysis.** Spring term. Credit four hours. Prerequisite: 311 and a knowledge of linear algebra as taught in 331. T Th S 11:15. Functions of several variables.

**411–412 Introduction to Analysis.** 411 fall term only; 412 spring term only. Credit four hours a term. Prerequisite: 222. T Th S 10:10. (There will be a special Honors section of this course. The instructor should be consulted.) An introduction to the theory of functions of real variables, stressing rigorous logical development of the subject rather than technique of applications. Topics include elementary topology, the real number system, continuous and differentiable functions, integration, convergence and approximation theorems, Fourier series, calculus in several variables and differential forms.

**413 Introduction to the Theory of Functions of One Complex Variable.** Spring term. Credit four hours. Prerequisite: 222 or 312. M W F 9:05.

A rigorous introduction to complex variable theory. Intended mainly for undergraduates and for graduate students outside mathematics; graduate students in mathematics desiring a first course in complex variable should take 511–512. Complex numbers. Differential and integral calculus for functions of a complex variable including Cauchy's theorem and the calculus of residues. Elements of conformal mapping. Elements of several complex variables.

## Algebra

**331 Linear Algebra.** Fall term. Credit four hours. Prerequisite: one year of calculus. A student may not receive credit in both 221 and 331. M W F 10:10. Emphasis on applications rather than theoretical development. Vectors, matrices, and linear transformations, affine and euclidean spaces, transformation of matrices, and eigenvalues.

**332 Algebra and Number Theory.** Spring term. Credit four hours. Prerequisite: one year of calculus. M W F 10:10. Commutative rings with unity, fields, and finite groups. Motivations and examples are mostly derived from arithmetical problems on the integers or congruence classes of integers. Course 332 will not serve as a prerequisite for courses numbered 500 or higher.

**431–432 Introduction to Algebra.** 431 fall term only; 432 spring term only. Credit four hours a term. Prerequisite: 221 or 331. First term prerequisite to the second. M W F 10:10. (There will be a special Honors section of this course. The instructor should be consulted.)

A rigorous introduction to modern algebra. First term, linear algebra. Second term, introduction to algebraic systems such as groups, rings, modules, and fields.

## Geometry and Topology

**451–452 Classical Geometrics.** 451 fall term only; 452 spring term only. Credit four hours a term. Prerequisite: 221 or 331 or 431, which may be taken concurrently. First term prerequisite to the second. T Th S 9:05. Axiomatic methods in geometry. Foundations of Euclidean geometry. Non-Euclidean geometry, projective geometry, and other geometric theories.

**453–454 Introduction to Topology and Geometry.** 453 fall term only; 454 spring term only. Credit four hours a term. Prerequisite: 412 and 432, or consent of the instructor. T Th S 11:15. Topics in general and algebraic topology, differentiable manifolds, and perhaps some differential geometry.

## Probability and Statistics

**370 Elementary Statistics.** Fall term. Credit four hours. Prerequisite: 112, 122, or 192; or one of 106 and 108 with consent of the instructor. M W F 12:20. Preliminary examinations will be held at 7:30 p.m. on October 4, November 1, and December 6. Topics in probability which are essential to an understanding of statistics; introduction to the principles underlying modern statistical inference and the rationale underlying choice of statistical methods in various situations. This is a terminal course, intended for those who will take no further work in this area.

**371 Basic Probability.** Fall term. Credit four hours. Prerequisite: 213 or 222. M W F 11:15. Preliminary examinations will be held at 7:30 p.m. on October 4, November 1, and December 6. Topics covered include combinatorics, important probability laws, expectations, moments, moment generating functions, limit theorems. Emphasis is on diverse applications and on development of use in statistical applications. While this course can serve as a terminal course in basic probability, it is primarily intended for those who will continue with 472. (See also the descriptions of 370 and 571.)

**472 Statistics.** Spring term. Credit four hours. Prerequisite: 371 and knowledge of linear algebra such as taught in 221. M W F 11:15. Preliminary examinations will be held at 7:30 p.m. on February 21, April 4, May 2. Classical and recently developed statistical procedures are discussed in a framework which emphasizes the basic principles of statistical inference and the rationale underlying the choice of these procedures in various settings. These settings include problems of estimation, hypothesis testing, large sample theory. See also the description of 370, 473, and 574.

**473 Statistics.** Fall term. Credit four hours. Prerequisite: 472 or 574. M W F 9:05. Preliminary examinations will be held at 7:30 p.m. on October 4, November 1, and December 6. A continuation of Mathematics 472. Elementary considerations of combinatorial and optimum design construction. The multivariate normal distribution and statistical problems concerned with it. (This course, taught in alternate years, is prerequisite to Mathematics 674.)

**[475 Sequential Analysis and Nonparametric Inference.** Not given in 1972–73.]

## Mathematical Logic

**381 Elementary Mathematical Logic.** Spring term. Credit four hours. Prerequisite: 122 or 200. M W F 11:15.

Propositional calculus via truth tables and as a formal axiomatic theory. Boolean algebras. Introduction to the predicate calculus.

## Medieval Studies

Students who plan to do graduate work in medieval studies at Cornell or elsewhere have an opportunity to take many relevant courses as undergraduates. Instruction is available in the following areas: medieval Hebrew, medieval Arabic, medieval Latin, Old English, Middle English, Old Provençal, medieval French, medieval Spanish, medieval Italian, Old Saxon, Old High German, Middle High German, Gothic, Old Norse (Old Icelandic), Old Russian, Old Bulgarian, Old Church Slavonic, medieval art and architecture, medieval history, Latin paleography, medieval philosophy, musicology, comparative Slavic linguistics, and comparative Romance linguistics.

Undergraduates who wish to do an independent major in medieval studies should consult the Field representative for Medieval Studies, Miss Alice Colby, 293 Goldwin Smith. The staff of the graduate program in medieval studies will do its best to guide such students.

**101–102 Medieval Literature and Culture.** 101, fall term only; 102, spring term only. Credit three hours a term. For description, see Freshman Seminars Program, p. 31.

## Modern Foreign Languages and Literatures

Courses in modern foreign languages and literatures are offered as follows:

**The Department of Modern Languages and Linguistics** (G. B. Kelley, Chairman) offers courses in linguistics and elementary and intermediate language courses (except where noted otherwise). For the course listings, see the separate language headings in this section.

An option is provided for elementary courses in most languages as follows. The basic course sequence, 101–102, gives a thorough grounding in the language—listening, speaking, reading, and writing. It is conducted in small groups with native speakers as instructors. The elementary reading course sequence, 131–132 and 133–134, concentrates on the comprehension of written texts.

For fulfillment of the language requirement for graduation, see p. 16; for attainment of Qualification, see p. 16. S-U options as explained on p. 18 of this *Announcement* may be chosen for all courses offered by the Department except for German 101–102 and Burmese, Thai, and Vietnamese.

**The Department of Romance Studies** (D. I. Grossvogel, Chairman) offers courses in French literature, Italian literature, and Spanish literature. See the separate language headings in this section for course listings and information about major programs.

**The Department of German Literature** (Herbert Deinert, Chairman) offers courses in German literature.

**The Department of Russian Literature** (G. Gibian, Chairman) offers courses in Russian literature.

## Course Placement

If a student has two or more years of high school credit for language study and wishes to continue study in that language, he must present a CEEB score. He shall choose

which course to take on the basis of the Placement Guidelines, a document which is sent to all incoming students and is posted at testing and advising centers. The Placement Guidelines match CEEB reading scores with courses at various levels. Placement in language courses for which no CEEB test exists is done in consultation with the appropriate professors in the Department of Modern Languages and Linguistics. If a student has had a year of formal study, or if he has had substantial informal study, since he last took the CEEB test, he is permitted to take it again, e.g., in September.

CEEB tests are administered by the University Guidance and Testing Center at Cornell before registration in September and in December, January, May, and August. A student who attains a score of 700 or above in the examination is eligible to take the Advanced Standing Examination administered by the Department of Modern Languages and Linguistics. The student is placed in the appropriate language course on the basis of performance in this examination; advanced standing credit may also be awarded on this basis.

## Burmese

Mr. R. B. Jones, Jr.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Hours to be arranged.

**201-202 Burmese Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: for 201, Qualification in Burmese; for 202, Burmese 201. Hours to be arranged. Mr. Jones.

**203-204 Composition and Conversation.** 203 fall term only; 204 Spring term only. Credit three hours a term. Prerequisite: for 203, Qualification in Burmese; for 204, Burmese 203. Hours to be arranged. Mr. Jones.

**301-302 Advanced Burmese Reading.** 301 fall term only; 302 spring term only. Credit four hours a term. Prerequisite: Burmese 201-202 or the equivalent. Hours to be arranged. Mr. Jones.  
Selected readings in Burmese writings in various fields.

## Cebuano (Bisayan)

Mr. J. U. Wolff.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Offered according to demand. Hours to be arranged.

## Chinese

Messrs. N. C. Bodman, J. McCoy, T. L. Mei; Mrs. Pei Shin Ni; Mr. H. Shadick; Mrs. Pilwun Wang; Mr. K. M. Wong.

For a major involving Chinese studies see Asian Studies.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. M-F 8, M W F 9:05.

**101C-102C Cantonese Basic Course.** 101C fall term only; 102C spring term only. Credit six hours a term. Prerequisite: consent of the instructor. M-F 9:05 plus lectures to be arranged. Mr. McCoy.

**131H-132H Elementary Hokkien Chinese.** 131H fall term only; 132H spring term only. Credit three hours a term. Prerequisite: consent of the instructor. M-F 11:15. Mr. Bodman.

**201-202 Intermediate Chinese I.** 201 fall term only; 202 spring term only. Credit four hours a term. Prerequisite: Qualification in Chinese. M-F 9:05.

**201C-202C Intermediate Cantonese.** 201C fall term only; 202C spring term only. Credit four hours a term. Prerequisite: Cantonese 102C or consent of the instructor. Hours to be arranged. Mr. McCoy.

**203-204 Chinese Conversation.** 203 fall term only; 204 spring term only. Credit one hour a term. S-U grades only. Prerequisite: Chinese 101-102. Two class hours. Can be repeated for credit.

Guided conversation and oral composition and translation. Corrective pronunciation drill.

**213-214 Introduction to Classical Chinese.** 213 fall term only; 214 spring term only. Credit three hours a term. Prerequisite: Qualification in Chinese or consent of instructor. This course can be taken concurrently with Chinese 201-202. Chinese 214 can be taken concurrently with Chinese 302. T Th 10:10 plus an additional hour to be arranged. Mr. Shadick, Mr. Wong.

**301 Intermediate Chinese II.** Fall term. Credit three hours. Prerequisite: Chinese 202 or the equivalent. M W F 10:10.  
Readings and drill in modern expository Chinese.

**302 Intermediate Chinese III.** Spring term. Credit three hours. Prerequisite: Chinese 301. M W F 10:10.  
Readings in modern Chinese with social science and humanities content.

**303-304 Chinese Conversation—Intermediate.** 303 fall term only; 304 spring term only. Credit one hour a term. S-U grades only. Prerequisite: Chinese 201-202. Hours to be arranged. Can be repeated for credit.  
Guided conversation and oral composition and translation. Corrective pronunciation drill.

**314 Chinese Philosophical Texts.** Spring term. Credit four hours. Prerequisite: Chinese 214. M W F 11:15. Mr. Mei.

**320 T'ang and Sung Poetry.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Mei.

**401-402 History of the Chinese Language.** 401 fall term only; 402 spring term only. Credit four hours a term. Prerequisite: consent of the instructor. W 2:30-4:25. Mr. Bodman.

**403 Linguistic Structure of Chinese: Phonology and Morphology.** Fall term on student demand. Credit four hours. Prerequisite: consent of the instructor. T 2:30-4:25. Mr. Bodman.

**404 Linguistic Structure of Chinese: Syntax.** Spring term on student demand. Credit four hours. Prerequisite: Chinese 403. T 2:30-4:25. Mr. McCoy.

**405 Chinese Dialects.** Fall term on student demand. Credit four hours. Prerequisite: consent of the instructor. Th. 2:30-4:25. Mr. Bodman.  
Emphasis on comparative and contrastive phonology.

**411-412 Advanced Readings in Modern Chinese.** 411 fall term only; 412 spring term only. Credit four hours a term. Prerequisite: Chinese 302. M W F 1:25.

**413 Classical Chinese Prose.** Fall term. Credit four hours. Prerequisite: Chinese 214. M W F 11:15. Mr. Shadick.

**416 Pre-T'ang Poetry.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Mei.

**418 Chinese Poetic Drama.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Wong.

**[420 Traditional Fiction.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Wong. Not offered in 1972-73.]



**421-422 Directed Study.** 421 fall term only; 422 spring term only. Credit two to four hours a term. Prerequisite: consent of the instructor. Hours to be arranged. Staff.

**[423 Readings in Shorter Works of Fiction.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Wong. Not offered in 1972-73.]

**[424 Readings in Literary Criticism.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Mei. Not offered in 1972-73.]

**430 Readings in Folk Literature.** Either term on student demand. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. McCoy.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

**[503 Seminar in Chinese Poetry and Poetics.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Mei. Not offered in 1972-73.]

**505 Seminar in Chinese Fiction.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Wong.

**507 Chinese Dialect Seminar.** Either term on student demand. Credit four hours. Prerequisite: Chinese 405 and consent of the instructor. Hours to be arranged. Mr. Bodman or Mr. McCoy. Analysis and/or field techniques in a dialect area.

**509 Seminar in Chinese Folk Literature.** Either term on student demand. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. McCoy.

**521-522 Advanced Directed Reading.** 521 fall term only; 522 spring term only. Credit and hours to be arranged. Prerequisite: consent of the instructor. Mr. McCoy, Mr. Mei, Mr. Wong.

**Sino-Tibetan Linguistics (Linguistics 582).**

## Dutch

F. C. van Coetsem.

**131-132 Elementary Reading Course I.** 131 fall term only; 132 spring term only. Credit three hours a term. Prerequisite: consent of the instructor. Hours to be arranged.

**133-134 Elementary Reading Course II.** 133 fall term only; 134 spring term only. Credit three hours a term. Prerequisite: Dutch 132 or consent of the instructor. Hours to be arranged.

**Seminar in Dutch Linguistics (German 681-682).**

## English as a Second Language

Mr. C. E. Elliott, Mrs. Marilyn Martin.

The following courses are offered by the Department of Modern Languages and Linguistics. Foreign students should consult a member of the Department to arrange for placement in courses suited to their competence in the English language. (Morrill 106).

**102 English as a Second Language.** Fall term. Credit six hours. Prerequisite: placement by the instructor. M T W Th F 9:05 plus two hours to be arranged.

**211-212 English as a Second Language.** 211 fall term only; 212 spring term only. Credit three hours a term. Prerequisite: placement by the instructor. M W F 11:15 or 2:30.

**213 English for Nonnative Speakers.** Spring term. Credit three hours. Prerequisite: English 212 or placement by the instructor. Hours to be arranged. Mr. Elliott and staff.

This course is designed for nonnative speakers of English whose fluency is sufficient for them to carry on regular academic work, but who feel the need for refining and developing their ability to express themselves clearly and effectively. Writing style and the effect of some of the less obvious syntactic constructions will be emphasized. As much as possible, individual attention will be given to students in two class hours and a weekly interview.

## French

Miss Alice Colby; Mr. H. Dieckmann; Miss Nelly Furman; Messrs. D. I. Grossvogel, P. Lewis; Mrs. Alexandra Littauer; Messrs. J. Mehlman, E. Morris, J. S. Noblitt; Mrs. Jean Parrish; Mrs. Linda Sangster; Mr. A. Seznec.

### French Major

The French major is designed to give the student proficiency in the oral and written language, to acquaint him with a fair portion of the masterworks of French literature, and to develop his skill in literary analysis.

The student wishing to major in French should consult a member of the French faculty with whom he will work out his plan of studies. The student's previous training and his interests will be taken into account in order to devise a coherent program. He will be encouraged to take courses in related subjects such as anthropology, music, history, art history, philosophy, linguistics, Classics, English, comparative literature and other foreign languages and literatures.

Interested students are encouraged to seek faculty advice about the major as early as possible. For admission to a major in French, students should normally have completed French 201, 202, and 211-212 (or 203-204) or their equivalents and should be accepted by the director of undergraduate studies (Mr. Mehlman).

To fulfill the major requirements, students are expected to complete successfully twenty-four hours of French literature courses at the 300 level or higher. Students seeking teacher certification may substitute one term of French 401-402 or 403 for four hours of the twenty-four required. One or more courses offered by the Department of Comparative Literature may be counted towards the required twenty-four hours if the student obtains the prior approval of his major adviser. The student majoring in French will also be expected to develop competence in the language. This competence is demonstrated by the successful completion of French 312 or by the passing of a special examination to be taken no later than the end of the junior year. For any question concerning placement in language courses within the Department please consult Mr. Morris, who will arrange a placement test whenever necessary.

French majors may study in France during their junior year under any of several study-abroad plans which are recognized by the Department and which allow the transfer of credit. The Department has information on such plans.

### The Honors Program

The purpose of the Honors program is to encourage well-qualified students to do independent work in French literature, outside the structure of courses. The preparation of the senior Honors essay, in particular, spread out over three terms, provides a unique learning opportunity, since it allows for wide reading, careful outlining, and extensive rewriting to a degree not practically

possible in the case of course papers. At each stage of his work the student will have regular weekly meetings with his faculty tutor.

No special seminars or courses are required of Honors students. The junior tutorial (ordinarily, two terms; exceptionally, one) will be devoted to intensive study of selected problems or authors, and to the choice of a topic for the Honors essay; the senior tutorial, to the writing of that essay. Honors students may be released from one or two courses in either the junior or senior year to have adequate time for Honors work (credit is obtained by enrolling in French 419–420). They will take an informal oral examination at the end of the senior year.

Honors students are selected on the basis of their work in French and literature courses in the freshman and sophomore years. Students interested should consult Mr. Morris for details, no later than the spring term of sophomore year, and earlier if possible.

### Teacher Preparation Programs

Cornell offers two teacher preparation programs in modern languages: one at the graduate level (M.A.T.) and one at the undergraduate level (leading to provisional certification, valid for five years). For information, consult either the Department of Modern Languages and Linguistics or the Department of Romance Studies.

### Distribution Requirement

The Distribution requirement in the humanities is satisfied in French by French 201 plus 202.

Of the courses listed below, those dealing with literature, together with language courses 200, 211–212 and 311–312, are staffed and administered by the Department of Romance Studies, and inquiries in regard to them should be addressed to that Department (Goldwin Smith 278).

The courses dealing with linguistics and the other language courses are offered by the Department of Modern Languages and Linguistics (Morrill 106).

### Language and Linguistics

#### 101–102 Basic Course (Conversation and Reading).

101 fall term only; 102 spring term only. Credit six hours a term. Assumes no knowledge of French; students who have previously studied French should consult p. 91 before registering for this course. Drill M–F 8, 9:05, 10:10, 1:25; lecture T Th 9:05, 12:20.

**131–132 Elementary Reading Course I.** 131 fall term only; 132 spring term only. Credit three hours a term. Assumes no knowledge of French; students who have previously studied French should consult p. 91 before registering for this course. M W F 9:05, 11:15, 1:25, 2:30.

**133–134 Elementary Reading Course II.** 133 fall term only; 134 spring term only. Credit three hours a term. Prerequisite: French 132 or the equivalent. M W F 2:30 or 3:35 or T Th S 9:05. Lecture: fall term, Th 11:15 or F 1:25; spring term, F 1:25. Grammar review and further reading.

**200 Intermediate Course (Reading).** Either term. Credit three hours. Prerequisite: Qualification in French (for definition of Qualification, see p. 16). Fall term: M W F 10:10, 12:20, 2:30 or T Th S 9:05 or 11:15. Spring term: M W F 10:10, 12:20, 2:30 or T Th S 10:10. Miss Furman, Mr. Lewis and staff. Extended readings and discussions of modern texts selected for their cultural and humanistic value.

**203 Intermediate Course (Conversation).** Either term. Credit three hours. Prerequisite: Qualification in French (for definition of Qualification, see p. 16). Fall term: M W F 8, 11:15, 12:20, 1:25 or T Th S 9:05 or 10:10; lecture W 10:10, W 11:15, T 10:10, or T 2:30. Spring term:

M W F 9:05, 1:25 or T Th S 10:10 or 11:15; lecture W 11:15 or T 1:25.

Emphasis is placed upon increasing the student's oral command of French. Guided conversation, composition, reading, pronunciation, and grammar drill.

**204 Intermediate Composition and Conversation.** Spring term. Credit three hours. Prerequisite: French 203 or equivalent. M W F 8, 9:05, 11:15, 12:20, 1:25 or T Th S 9:05, 10:10, or 11:15; lecture W 2:30 or T 10:10, or T 2:30. Continuation of the work of French 203, with special attention to accurate and idiomatic expression in French. Oral and written drill.

**211–212 Intermediate French.** Throughout the year. Credit three hours a term. Prerequisite: Qualification in French (for definition of Qualification see p. 16). Fall term, M W F 11:15 or T Th S 9:05. Spring term, M W F 9:05 or T Th S 9:05. Mr. Mehlman and staff. Review of French grammar and study of the language through the critical reading of texts on French culture and literature. Students will write short essays in French. In addition, there will be one hour of conversation per week in groups of three or four students.

**311–312 Advanced Composition and Conversation.** Throughout the year. Credit four hours a term. Prerequisite: French 212 or 204, or placement by special examination. T Th S 10:10. Mr. Morris and staff. Reading and analysis of selected contemporary texts. Detailed study of present-day syntax. Weekly translations or essays in French. One hour of conversation each week in groups of two or three students. The first semester will focus on French civilization; the second semester places more emphasis on literary texts and intellectual issues. Class discussion conducted in French.

**401–402 History of the French Language.** 401 fall term only; 402 spring term only. Credit four hours a term. Prerequisite: Qualification in French, and Linguistics 201. M W 2–3:30. Mr. Noblitt (fall) and Mrs. Sangster (spring). Detailed study of the structural development of French from the origins to the modern period.

**403 Linguistic Structure of French.** Fall term. Credit four hours. Prerequisite: Qualification in French, and Linguistics 201. M W 3:35–5. Mrs. Sangster. A descriptive analysis of present-day French, with emphasis on its phonetics, phonemics, morphology, and syntax. Required of students seeking certification by New York State.

#### The Comparative Study of the Romance Languages (Linguistics 441–442, 443–444, 445, 446, 450).

**404 French for Teachers.** Spring term. Credit four hours. Prerequisite: Qualification in French. M W 3:35–5. Mr. Noblitt. Survey of the current teaching methods, preparation of teaching materials, selection and use of textbooks and realia. Further study of structure of French as needed for professional preparation. Required of students seeking certification by New York State.

**450 Practice Teaching.** Either term. Credit six hours. Prerequisite: French 403 (the methods course, French 404 can be taken concurrently with practice teaching). Open only to students enrolled in a teacher preparation program. Students will observe, and then participate in, teaching classes in the secondary school system. They will also get acquainted with a language laboratory.

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**[554 Gallo-Romance Dialectology.** Spring term. Credit four hours. Prerequisite: Linguistics 441–442, 443–444, or consent of the instructor. T Th 2:30. Given in alternate years. Not offered in 1972–73.]

**558 Linguistic Structures of Old and Middle French.** Spring term. Credit four hours. Prerequisite: French 403 or consent of the instructor. T Th 3:35–4:50. Mr. Noblitt.

**600 Seminar in French Linguistics.** According to demand. Credit four hours a term. Hours to be arranged. Staff.

### Literature

**105 Critic and Visionary from Voltaire to Sartre.** Fall term. Credit three hours. M W F 1:25. Miss Colby. For description see Freshman Seminars Program, p. 30.

**106 Laughter: A Study of the Philosophical and Psychological Origins of Laughter.** Spring term. Credit three hours. M W F 1:25. Mrs. Parrish. For description see Freshman Seminars Program, p. 30.

**201 Introduction to French Literature: The Modern Tradition.** May be taken either term. Credit three hours. Prerequisite: a score of 630 on the written part of the College Board Achievement Test; the ability to read literary French with some facility is presupposed. French 201 serves as prerequisite for all 300-level courses in French literature, and is required of all majors. Fall term: M W F 9:05, 10:10, 11:15, 12:20, 2:30, or T Th S 9:05, 10:10, 11:15. Spring term: M W F 10:10, 11:15 or T Th S 9:05, 11:15. Miss Furman, Mrs. Parrish, Messrs. Grossvogel, Seznec, and staff.

This course will introduce the student to the major genres (poetry, drama, and the novel) in the late nineteenth and early twentieth centuries, and will treat the principal themes, techniques, and interpretive dilemmas encountered in modern French literature. Readings will include Baudelaire, *Les Fleurs du Mal*, Mallarmé, *Poésies Choiesies*, Beckett, *En Attendant Godot*, Genet, *Le Balcon*, Proust, *Combray*, Sartre, *La Nausée*.

**202 Studies in French Literature.** Spring term. Credit three hours. Prerequisite: for majors, French 201; for nonmajors, a score of 630 on the College Board of Achievement Test. Required of all majors but not limited to them. T Th S 11:15. Mr. Lewis.

Primary emphasis will be placed upon development, by the student, of the critical and analytical skills required to confront texts read in their political, sociological, historical, and literary contexts. Authors such as Ronsard, Racine, Mme de Lafayette, Diderot, etc., will be read.

**358 Rabelais.** Spring term. Credit four hours. T Th 2:30–3:45. Mr. Morris.

Attentive, well-informed, speculative reading of Rabelais's French works is an enjoyable and strenuous entertainment. Some questions it raises may be extended and clarified by the study of popular culture at the end of the Middle Ages (farces and sideshows, street life and village life, chapbooks and almanacs, the sermons of the Franciscan preachers); others, by the history of Renaissance medicine and the learned recovery of the classical tradition; others still, by consulting recent anthropology and depth psychology on such matters as jokes and play, obscenity, nightmares, and myths. Modern theories of language may help to understand Rabelais's purposes, and those of James Joyce, his nearest kin. Conducted in French.

**379 Study of Two Key Concepts in Eighteenth-Century Thought: "Imagination" and "Esprit." (Formerly French 377.)** Fall term. Credit four hours. T Th S 9:05. Mrs. Parrish.

Readings in Locke, Condillac, Diderot, Voltaire. An attempt will be made to define "imagination" and "esprit" and place them in the context of the development of epistemology in the eighteenth century. Class conducted in French.

**380 Women in Nineteenth-Century French Literature.** Spring term. Credit four hours. M W 1:25–2:40. Miss Furman. An in-depth examination of the status of women as seen

in some representative works of the writers of the time (Balzac, Stendhal, Baudelaire, Flaubert, and Zola) and as expressed in the works of women writers, such as Mme de Staël, Marceline Desbordes-Valmore, and George Sand. Lectures in French, classroom discussions, written reports.

**388 Baudelaire, Mallarmé: Poetry and Criticism.** Spring term. Credit four hours. M W F 11:15. Mr. Mehlman. Lectures in French.

**392 What is Theater? (Formerly French 593.)** Spring term. Credit four hours. M W F 9:05. Mr. Grossvogel. The nature of the theatrical experience discussed through various forms of twentieth-century experimentation in French drama. Authors such as Anouilh, Artaud, Beckett, Camus, Ionesco, Genet, Sartre, etc., will be analyzed. Two lectures in French and one discussion period per week.

**419–420 Honors Work in French.** May be taken without credit or for four hours with consent of the adviser. Open to juniors and seniors. See director of Honors program, Mr. Morris.

**447–448 Medieval Literature.** Throughout the year. Credit four hours. Prerequisite: two terms of 300-level French literature courses or consent of the instructor. First term not prerequisite to the second. Fall term: M W F 9:05. Spring term: F 2:30–4:25, and an additional hour to be arranged for students entering in the spring term without previous training in Old French. Miss Colby. Translation of Old French texts into English and Modern French. The first term deals with the epic; the second term with the romance. Facility in reading Old French and appreciation of these two major genres are the primary goals of this course, but some attention will be given to other important genres.

**462 Racine.** Spring term. Credit four hours. Prerequisite: French 201–202 or consent of the instructor. M W 2:30–3:45. Mr. Seznec. The course will focus on Racine the dramatist. All of his tragedies will be read and discussed.

**481 The Language of Romanticism.** Fall term. Credit four hours. M W 2:30–3:45. Mr. Lewis. Rather than survey the French Romantic movement, this course attempts to identify and appreciate what is specifically romantic (as opposed to classical or realist) in the style, texture, and point of view of a few major works: selected poems of Vigny and Lamartine, plays of Musset (*Lorenzaccio*) and Hugo (*Hernani*), novels of Stendhal (*La Chartreuse de Parme*) and Balzac (*La Peau de Chagrin*).

**496 Theatre and Poetry of Paul Claudel.** Spring term. Credit four hours. Th 2:30–4:25. Mr. Dieckmann.

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**546 Medieval Seminar: The Arthurian Prose Romances.** Spring term. Credit four hours. W 2:30–4:25. Miss Colby. Emphasis will be placed on the *Queste del Saint Graal* and the *Mort le roi Artu*.

**555 Maurice Scève in the Hermetic Tradition.** Fall term. Credit four hours. T 2:30–4:25. Mr. Morris.

**570 Diderot as Critic of Literature and the Fine Arts.** Spring term. Credit four hours. T 2:30–4:25. Mr. Dieckmann.

**599 Blanchot, Bataille, and French Modernity.** Fall term. Credit four hours. F 2:30–4:25. Mr. Mehlman.

**639–640 Special Topics in French Literature.** Credit four hours. Staff.

### German

Miss Eva Augsberger; Messrs. D. Bansberg, V. Bjarnar, E. A. Blackall; Mrs. Lucy Collings; Messrs. D. Connor,

H. Deinert; Mrs. Inga Ezergailis; Messrs. S. L. Gilman, R. Jayne; Mrs. Ingrid Kovary; Messrs. H. Kufner, P. Lowe, Jr., F. van Coetsem.

### German Major

Students majoring in German are encouraged to design their programs in a manner which will allow for diversity in their course of study. It should enable them to become acquainted with an adequate selection of major works, authors, and movements of German literature and to develop their skill in literary analysis. Students majoring in German will normally proceed through German 201, 202, and 203-204. However, if their previous training qualifies them for immediate enrollment in 300- and 400-level courses, every effort will be made to permit them to do so. For details, please consult the major adviser, Mrs. Ezergailis. Students majoring in German are expected to complete successfully a minimum of six 300- and 400-level courses in addition to German 303-304. These courses should be a representative selection of subjects in German literature and/or Germanic linguistics. The attention of students majoring in German is called to the courses offered by the Department of Comparative Literature, many of which complement the course offerings in German.

Students majoring in German are expected to become competent in the German language. This competence is normally demonstrated by the successful completion of German 304. The placement in language courses of German majors who have done no language work at Cornell will be determined by the level of preparation they have obtained elsewhere. For details, please consult the major adviser, Mrs. Ezergailis. All German majors, particularly those who have had no German prior to coming to Cornell, are encouraged to spend at least part of their junior year abroad. Students have the opportunity to enroll, for credit, in a Cornell-sponsored Summer Language Program in Germany. Information is available upon request at the departmental offices.

### The Honors Program

The Honors program in German is open to superior students who wish to work independently in an area of their own choice. Students are free to select any member of the Field of Germanic Studies to assist them in designing their Honors program, to supervise their work, and to help them select a suitable topic for an Honors essay. The independent study courses 451, 452 may form part of the program.

### Distribution Requirement

The Distribution requirement in the humanities is satisfied in German by German literature courses on the 200 level and above.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Students who have previously studied German should consult p. 91 before registering for this course. Drill, M-F 8, 10:10, 11:15, 12:20; lecture, M W 9:05.

**103, 104 Freshman Seminar in German Literature in English Translation.** 103 fall term only; 104 spring term only. Credit three hours a term. Mr. Connor, Mrs. Ezergailis, and staff.  
For description, see Freshman Seminars Program, p. 30.

**105-106 Elementary German for Literary Studies.** 105 fall term only; 106 spring term only. Credit three hours a term. Students who have previously studied German should consult p. 91 before registering for this course. M W F 1:25. Mr. Bansberg.

The course is intended to give students with no previous knowledge of German the ability to read and understand German literary texts. A substantial amount of reading is

handled, but speaking German is also an important aspect of the course, the topic of conversation usually being some work of literature. For further information, contact the Department of German Literature.

**131-132 Elementary Reading Course I.** 131 fall term only; 132 spring term only. Credit three hours a term. Students who have previously studied German should consult p. 91 before registering for this course. M W F 8, 9:05, 10:10, 11:15, 12:20, 1:25, 2:30, or T Th S 9:05.

**133-134 Elementary Reading Course II.** 133 fall term only; 134 spring term only. Credit three hours a term. Prerequisite: German 132 or the equivalent. M W F 10:10, 2:30.

**201 Problems in the Analysis of Drama.** Either term. Credit three hours. Prerequisite: Qualification in German. (For definition of Qualification, see p. 16.) Fall term: M W F 9:05, 12:20; T Th S 10:10. Spring term: T Th 3:35. Mr. Deinert, Mr. Gilman, Mr. Jayne, and staff. Self-confrontation and social conflict in the plays of six major Austrian, Swiss, and German dramatists: Dürrenmatt, Brecht, Büchner, Hofmannsthal, Weiss, and Kleist. The texts will be used to help students to develop an analytic approach to drama as well as to enable them to improve their reading knowledge of German.

**202 Problems in the Analysis of Prose.** Either term. Credit three hours. Prerequisite: Qualification in German. (For definition of Qualification, see p. 16.) Fall term: T Th 3:35. Spring term: M W F 9:05, 12:20; T Th S 10:10. Mr. Deinert, Mr. Gilman, Mr. Jayne, and staff. The complexities of inner and outer reality as expressed in selected prose works of Kafka, Mann, Kleist, Grass, Brecht, Tieck, and Rilke. These texts will be used to develop a critical method for the reading of modern narrative literature.

**203 Intermediate Composition and Conversation.** Either term. Credit three hours. Prerequisite: Qualification in German. (For definition of Qualification, see p. 16.) Fall term: M W F 9:05, 10:10, 11:15, 1:25. Spring term: M W F 12:20. Miss Augsburg. Guided conversation and oral and written composition, with special attention to accurate and idiomatic expression in German.

**204 Intermediate Composition and Conversation.** Spring term. Credit three hours. Prerequisite: German 203 or consent of the instructor. M W F 9:05 or 10:10. Miss Augsburg. Continuation of the work of German 203. Emphasis is placed on increasing the student's active vocabulary and command of grammatical patterns.

**303-304 Advanced Composition and Conversation.** 303 fall term only; 304 spring term only. Credit four hours a term. Prerequisite: German 204 or consent of the instructor. M W F 2:30. Miss Augsburg. Emphasis is placed on increasing the student's oral and written command of German. Detailed study of present-day syntax and different levels of style.

**[351 Aufklärung, Sturm, und Drang.** Fall term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. Not offered in 1972-73.]

**354 Schiller's Dramas.** Spring term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. M W F 9:05. Mr. Bansberg. An intensive study of Schiller's development as a dramatist from his early revolutionary plays (*Die Räuber*, *Kabale und Liebe*) to his later tragedies (*Wallenstein*, *Die Braut von Messina*) with emphasis on their social and political context. The course will be conducted in German.

**[355 The Young Goethe.** Fall term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. Mr. Blackall. Not offered in 1972-73.]



**[356 Goethe's Faust.** Spring term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. Mr. Deinert. Not offered in 1972-73.]

**[357 Romanticism.** Fall term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. Mr. Jayne. Not offered in 1972-73.]

**[359 Nineteenth-Century Realism I: Prose and Poetry.** Fall term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. Mr. Gilman. Not offered in 1972-73.]

**360 Nineteenth-Century Realism II: The Drama.** Fall term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. T Th S 9:05. Mr. Jayne. Emphasis will be put on a close reading of the major dramatists of the nineteenth century including Grillparzer, Kleist, Büchner, Hebbel, and the young Hauptmann. The dramas will be viewed in their greater political and social context, with special emphasis on the development of European Realism and Naturalism.

**361 Modern German Literature I: Twentieth-Century German Prose.** Spring term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. M W F 9:05. Mr. Deinert.

The course will deal mainly with shorter prose works of authors such as Hesse, Hofmannsthal, Kafka, Thomas Mann, Dürrenmatt, Frisch, and Grass. An intensive analysis of modern prose works with emphasis on their reflection of contemporary attitudes and problems.

**[362 Modern German Literature II: The Drama.** Spring term. Credit four hours. Prerequisite: German 201, 202 or consent of the instructor. Mrs. Ezergailis. Not offered in 1972-73.]

**363 Modern German Literature III: Lyrical Poetry.** Fall term. Credit four hours. Prerequisite: German 201, 202, or consent of the instructor. M W F 9:05. Mr. Bansberg. A study of the major achievements of poets such as George, Hofmannsthal, Rilke, Benn, Trakl, Celan, and Krolow. Some attention will be given to political poetry written in Germany between 1933 and 1945. The course will be conducted in German.

**[401 History of the German Language.** Fall term. Credit four hours a term. Given in alternate years. Prerequisite: German 204 and Linguistics 201, or consent of the instructor. M W F 11:15. Mr. Kufner. Not offered in 1972-73.]

**403 Linguistic Structure of German.** Fall term. Credit four hours. Prerequisite: German 204 and Linguistics 201, or consent of the instructor. M W F 10:10. Mr. Kufner. A descriptive analysis of present-day German, with emphasis on its phonetics, phonemics, morphology, and syntax.

**404 German for Teachers.** Spring term. Credit four hours. Prerequisite: German 403. M W F 10:10. Mr. Kufner. Methods of teaching the language based on a contrastive study of the structure of English and German. Extensive outside reading, reports on textbooks, discussion of various teaching aids and realia. Required for New York State teacher certification.

**405 Introduction to Medieval German Literature.** Fall term. Credit four hours. M W F 11:15. Mr. Blackall. Intended for students with no previous knowledge of Middle High German. The course will provide a survey of the most outstanding works of the Court Epic, the Heroic Epic, and Minnesang. Emphasis will be placed on a thorough understanding of the Middle High German language.

**[411 Modern Dramatists: Bertolt Brecht.** Fall term. Credit four hours. M W F 10:10. Mr. Connor. Not offered in 1972-73.]

**413 Topics in German Literature I: The Modern German Novel (in English translation).** Fall term. Credit four hours. M W F 11:15. Mr. Deinert.

The spirit of the first half of this century as reflected in the form and content of prose works by a variety of major authors. Emphasis will be placed on Hesse (*Siddhartha*, *Demian*, *Steppenwolf*), Kafka (*Amerika*, *The Trial*, the major short stories), Rilke (*The Diary of Malte Laurids Brigge*), Remarque (*All Quiet on the Western Front*), Broch (*The Sleepwalkers*), Thomas Mann (*Tonio Kröger*, *Tristan*, *Death in Venice*, *Doctor Faustus*). Lectures and discussions.

**[414 Topics in German Literature II: Nietzsche, the Man and the Artist (in English translation).** Spring term. Four credit hours. T 1:25 lecture; Th 1:25 discussion. Mr. Gilman. Not offered in 1972-73.]

**417, 418 The Great Moments of German Literature.**

417 fall term only; 418 spring term only. Credit four hours a term. Prerequisite: reading knowledge of German. M W F 10:10. Mr. Blackall.

Recommended for graduate students and undergraduates, whether majoring in German or not, who wish to acquire an overall view of the whole range of German literature from the earliest texts to the present day. The course will consist of lectures and discussion classes. The lectures will aim at a characterization of the temper of a period or of the essential nature of a certain writer. The discussion periods will concentrate on individual works illustrative of the topics of the lectures.

**[424 Old Norse Sagas in English Translation.** Spring term. Mrs. Collings. Not offered in 1972-73.]

**450 Practice Teaching.** Either term. Credit six hours. Prerequisite: German 403 (the methods course, German 404 can be taken concurrently with practice teaching). Open only to students enrolled in a teacher preparation program.

Students will observe, and then participate in teaching classes in the secondary school system. They will also get acquainted with a language laboratory.

**451, 452 Independent Study.** 451 fall term only; 452 spring term only. Credit four hours a term. Staff. Extensive reading of texts supplementary to regular course work, under the direction of a member of the Department.

**Three Novelists: Stendhal, Dickens, and Mann (Comparative Literature 471).**

**Kierkegaard (Comparative Literature 481).**

**Myth and Literature (Comparative Literature 416).**

**The Picaresque Novel (Romance Studies 455).**

For complete descriptions of courses numbered 500 or above, consult the appropriate graduate Field representative.

**501 Introduction to Germanic Linguistics.** Fall term. Credit four hours. Given in alternate years. Prerequisite: Linguistics 201. W 1:25. Mr. van Coetsem.

**502 Gothic.** Spring term. Credit four hours. Given in alternate years. Prerequisite: Linguistics 201. W 125. Mr. van Coetsem.

**[503-504 Old Saxon, Old High German, Old Low Franconian, Old Frisian.** 503 fall term only; 504 spring term only. Credit four hours a term. Given in alternate years. Prerequisite: Linguistics 201. M W F 3:35. Mr. van Coetsem. Not offered in 1972-73.]

**509-510 Old Norse.** 509 fall term only; 510 spring term only. Credit four hours a term. Hours to be arranged. Mr. Bjarnar.

**511 Sagas.** Fall term. Credit four hours. Prerequisite: German 510 or consent of the instructor. Hours to be arranged. Mr. Lowe.

**512 Edda.** Spring term. Credit four hours. Prerequisite: German 510 or consent of the instructor. Hours to be arranged. Mr. Lowe.

**[520 Germanic Mythology.** Spring term. Credit four hours. Prerequisite: reading knowledge of modern German. Mrs. Collings. Not offered in 1972-73.]

**[521 Middle High German Literature I.** Fall term. Credit four hours. Prerequisite: German 405 or consent of the instructor. Mrs. Collings. Not offered in 1972-73.]

**522 Medieval Lyrical Poetry.** Spring term. Credit four hours. Prerequisite: German 405 or consent of the instructor. T 2-4. Mrs. Collings.

**527 Lyrical Poetry of the Baroque.** Spring term. Credit four hours. M 1:25-3:25. Mr. Jayne.

**530 Lessing.** Fall term. Credit four hours. T 1:25-3:25. Mr. Connor.

**531 Goethe's Novels.** Fall term. Credit four hours. Th 2-4. Mr. Blackall.

**532 Goethe's Faust.** Spring term. Credit four hours. Th 1:25-3:25. Mr. Blackall.

**533 Kleist.** Fall term. Credit four hours. W 1:25-3:25. Mr. Deinert.

**535 Nineteenth-Century Lyrical Poetry.** Fall term. Credit four hours. M 2-4. Mrs. Ezergailis.

**536 Nineteenth-Century Drama.** Spring term. W 1:25-3:25. Mr. Deinert.

**[538 Twentieth-Century German Literature.** Spring term. Credit four hours. Mr. Deinert. Not offered in 1972-73.]

**[540 History and Methods of Modern German Literary Criticism.** Spring term. Credit four hours. Mr. Gilman. Not offered in 1972-73.]

**[541 The Post-War German Novel.** Fall term. Credit four hours. Mrs. Ezergailis. Not offered in 1972-73.]

**599 Colloquium on the Teaching of Literature.** Either term. Credit one hour. Open to teaching assistants in the Department of German Literature. Composed of all faculty members and assistants teaching undergraduate courses. Meetings every other week to be arranged.

**[621-622 Computer Methods in Germanic Studies.** 621 fall term only; 622 spring term only, subject to the needs of students and to the limitations of staff time. Credit four hours a term. Hours to be arranged. Not offered in 1972-73.]

**641-642 Seminar in Scandinavian Linguistics.** 641 fall term only; 642 spring term only, subject to the needs of students and to the limitations of staff time. Credit four hours a term. Hours to be arranged. Mr. Lowe. Selected topics including history, structure, and dialects of selected Scandinavian languages. 642 not offered in 1972-73.

**[651-652 Seminars in Germanic Linguistics.** 651 fall term only; 652 spring term only, subject to the needs of students and to the limitations of staff time. Credit four hours. Hours to be arranged. Various staff members. Not offered in 1972-73.]

**653, 654 Seminar in German Literature.** 653 fall term only; 654 spring term only. Credit four hours a term. Hours to be arranged. Staff.

**The Historical Novel (Comparative Literature 552).**

**661-662 Seminar in Comparative Germanic Linguistics.** 661 fall term only; 662 spring term only, subject to the needs of students and to the limitations of staff time. Credit four hours a term. Hours to be arranged. Mr. van Coetsem.

**[671-672 Seminar in German Linguistics.** 671 fall term only; 672 spring term only, subject to the needs of students and to the limitations of staff time. Credit four hours a term. Hours to be arranged. Mr. Kufner.

Selected topics including the history, structure, and dialects of modern German. Not offered in 1972-73.]

**[681-682 Seminar in Dutch Linguistics.** 681 fall term only; 682 spring term only, subject to the needs of students and to the limitations of staff time. Credit four hours a term. Hours to be arranged. Mr. van Coetsem.

Selected topics including the history, structure, and dialects of modern Dutch. Not offered in 1972-73.]

## Hindi-Urdu

Messrs. C. E. Elliott, J. W. Gair, and G. B. Kelley.

**101-102 Hindi-Urdu Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Drill, M-F at 9:05; lecture, T Th 10:10.

**201-202 Hindi Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: for 201, Qualification in Hindi; for 202, Hindi 201 or consent of the instructor. Hours to be arranged.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: for 203, Qualification in Hindi; for 204, Hindi 203 or consent of the instructor. Hours to be arranged.

**301-302 Readings in Hindi Literature.** Credit four hours a term. Prerequisite: Hindi 202. Hours to be arranged.

**303-304 Advanced Composition and Conversation.** 303 fall term only; 304 spring term only. Credit four hours a term. Prerequisite: Hindi 204. Hours to be arranged.

**305-306 Advanced Hindi Readings.** 305 fall term only; 306 spring term only. Credit four hours a term. Prerequisite: Hindi 202. Hours to be arranged. Intended for those who wish to do readings in history, government, economics, etc., instead of literature.

**401 History of Hindi.** Fall term in alternate years. Credit four hours. Prerequisite: Hindi 101-102, or equivalent, and Linguistics 202. Hours to be arranged.

For complete descriptions of courses numbered 500 and above, consult the graduate Field representative.

**600 Seminar in Hindi Linguistics** (See also Linguistics 331, 432, 521, 530, 531, 534). Either term. Credit three hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Elliott, Mr. Gair, or Mr. Kelley.

## Indonesian

Messrs. J. M. Echols and J. U. Wolff.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Hours to be arranged.

**201-202 Indonesian Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: for 201, Qualification in Indonesian; for 202, Indonesian 201 or consent of the instructor. Hours to be arranged.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: for 203, Qualification in Indonesian; for 204, Indonesian 203 or consent of the instructor. Hours to be arranged.

**301-302 Readings in Indonesian and Malay.** 301 fall term only; 302 spring term only. Credit four hours a term. Prerequisite: for 301, Indonesian 201-202 or the equivalent; for 302, Indonesian 301. Hours to be arranged.

**303-304 Advanced Indonesian Conversation and Composition.** 303 fall term only; 304 spring term only. Credit four hours a term. Prerequisite: Indonesian 204 or the equivalent. Hours to be arranged.

**305-306 Advanced Readings in Indonesian and Malay Literature.** 305 fall term only; 306 spring term only. Credit

four hours a term. Prerequisite: Indonesian 302 or consent of the instructor. Hours to be arranged.

**403 Linguistic Structure of Indonesian.** Either term. Credit four hours. Prerequisite: Indonesian 101-102, or the equivalent, and Linguistics 201. Hours to be arranged. Mr. Wolff.

**Malayo-Polynesian Linguistics (Linguistics 573-574).**

## Italian

Messrs. G-P. Biasin and R. A. Hall, Jr.

### Italian Major

The student wishing to major in Italian should choose a faculty member to serve as his major adviser; the general plan and the details of the student's course of studies will be worked out by consultation. Italian majors are encouraged to take courses in related subjects such as history, art history, music, philosophy, anthropology, classics, linguistics, and other modern languages and literatures. While, theoretically, a Cornell major occupies only the junior and senior years, as a matter of practical fact it is wise for the student to seek faculty advice on the major as early as possible.

Students who elect to major in Italian should ordinarily have completed Italian Literature 201-202, and Italian Language 203-204 by the end of their sophomore year. Exemptions can be made on the basis of an examination. A student majoring in Italian is expected to become conversant with a fair portion of the masterworks of Italian literature, to acquaint himself with the outlines of Italian literary history, and to develop some skill in literary analysis. To this end he will be expected to complete successfully twenty-four hours of Italian literature courses at the 300 level or higher, with papers to be written in Italian or English, including a course on the history of the Italian language. One or more courses offered by the Department of Comparative Literature may be counted toward the required twenty-four hours if the student obtains the prior approval of his major adviser.

The student majoring in Italian will also be expected to acquire competence in the handling of the language. That competence may be demonstrated by the successful completion of Italian 304 or by the passing of an oral and written examination to be arranged with his adviser.

Italian majors may study in Italy, generally during their junior year, under any one of those study-abroad plans, organized by American universities, which allow the transfer of grades and credit, such as the Syracuse Semester in Italy in Florence.

### Distribution Requirement

The Distribution requirement in the humanities is satisfied in Italian by Italian 201-202.

Courses dealing with literature are staffed and administered by the Department of Romance Studies, and inquiries in regard to them ought to be addressed to that Department (Goldwin Smith 278).

The courses dealing with language and linguistics are offered and administered by the Department of Modern Languages and Linguistics.

### Language and Linguistics

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Drill, M-F 8 or 12:20; lecture, T Th 10:10.

**131-132 Elementary Reading Course.** 131 fall term only; 132 spring term only. Credit three hours a term. M W F 2:30.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: Qualification in Italian. M W F 9:05.

**[304 Advanced Composition and Conversation.** According to demand. Credit two to four hours. Prerequisite: Italian 204. Hours to be arranged. Not offered in 1972-73.]

**[432 Italian Dialectology.** Spring term. Credit four hours. Given in alternate years. M W F 9:05. Mr. Hall. Not offered in 1972-73.]

**433 Old Italian Texts.** Fall term. Credit four hours. Given in alternate years. Prerequisite: consent of the instructor. M W F 9:05. Mr. Hall.

**[434 History of the Italian Language.** Spring term. Credit four hours. Given in alternate years. Prerequisite: Qualification in Italian, and Linguistics 201. M W F 9:05. Mr. Hall. Not offered in 1972-73.]

**436 Structure of Italian.** Spring term. Credit four hours. Given in alternate years. Prerequisite: Qualification in Italian. M W F 9:05. Mr. Hall.

For complete descriptions of courses numbered 500 and above, consult the graduate Field representative.

**600 Seminar in Italian Linguistics.** Offered according to demand. Credit four hours. Mr. Hall.

### Literature

**201-202 Introduction to Italian Literature.** Throughout the year. Credit three hours a term. Prerequisite: Qualification in Italian. Classes will be conducted in Italian. Hours to be arranged. Staff.

**[327-328 Dante: *la Divina Commedia*.** Throughout the year. Credit four hours a term. Not offered in 1972-73.]

**329 Early Italian Prose and Poetry.** Fall term. Credit four hours. Prerequisite: consent of the instructor. T Th S 11:15.

The birth and development of Italian literature traced through the thirteenth- and early fourteenth-century love lyric, comic-realistic poetry, satire, political oratory, and religious prose and verse. Readings will include Dante's *Vita Nuova* and selections from some of his other works.

**Medieval Literature: Dante in Translation (Comparative Literature 334).**

**349 Il Quattrocento.** Spring term. Credit four hours. Prerequisite: consent of the instructor. T Th S 11:15. Readings will include works by such authors as Sannazzaro, Lorenzo il Magnifico, and Poliziano.

**361 Seventeenth-Century Italian Theatre: *La Commedia dell'Arte*.** Fall term. Credit four hours. M W F 10:10. The technique of improvisation. Study of a theatrical concept and related modern theories (Artaud, Grotowsky).

**[370 The Enlightenment in Italy.** Spring term. Credit four hours. Not offered in 1972-73.]

**[372 Eighteenth-Century Italian Theatre.** Spring term. Credit four hours. Not offered in 1972-73.]

**[385 The Nineteenth-Century Historical Novel.** Fall term. Credit four hours. Not offered in 1972-73.]

**389 The Romantic Movement.** Fall term. Credit four hours. Prerequisite: reading knowledge of Italian and consent of the instructor. T 2:30-4:30, Th 2:30. Mr. Biasin. The historical, cultural, and literary foundations of the Romantic movement in Italy in the works of its major representatives.

**435 Boccaccio.** Fall term. Credit four hours. Prerequisite: consent of the instructor. W 12:20-2:20. Readings will include the *Decameron* and selections from other works by Boccaccio.

**438 Petrarch.** Spring term. Credit four hours. Prerequisite: consent of the instructor. W 12:20-2:20.

Readings will include the *Canzoniere* and selections from Petrarch's other works.

**[444 Mirrors of Renaissance Man.** Spring term. Credit four hours. Not offered in 1972-73.]

**[451 Sixteenth-Century Italian Theatre.** Fall term. Credit four hours. Not offered 1972-73.]

**481 Modern Theatre: Luigi Pirandello.** Fall term. Credit four hours. Prerequisite: reading knowledge of Italian and consent of the instructor. W 2:30-4:30. Mr. Biasin. Reading and discussion of Pirandello's literary, fictional, and theatrical works, with emphasis on the interplay between literature and theatre.

**[485 Modern Novel: Giovanni Verga.** Fall term. Credit four hours. Not offered in 1972-73.]

**[487 Romantic Poetry: Ugo Foscolo.** Fall term. Credit four hours. Not offered in 1972-73.]

**488 Romantic Poetry: Giacomo Leopardi.** Spring term. Credit four hours. Prerequisite: reading knowledge of Italian and consent of the instructor. T 2:30-4:30. Mr. Biasin.

A reading of the poetry by the leading figure of Italian Romanticism, with a discussion of its critical problems.

**[498 Poetry of Decadentism: Gabriele D'Annunzio.** Spring term. Credit four hours. Not offered in 1972-73.]

For complete descriptions of courses numbered 500 or above, consult the graduate Field representative.

**[585 Romantic Novel: Alessandro Manzoni.** Fall term. Credit four hours. Not offered in 1972-73.]

**[594 Trends in Contemporary Criticism.** Spring term. Credit four hours. Not offered in 1972-73.]

**[595 Modern Novel: Italo Svevo.** Fall term. Credit four hours. Not offered in 1972-73.]

**596 Modern Novel: Cesare Pavese.** Spring term. Credit four hours. Prerequisite: reading knowledge of Italian and consent of the instructor. W 2:30-4:30. Mr. Biasin. An examination of the critical, poetical, and narrative works of a writer who remains a milestone in contemporary literature.

**[597 Contemporary Poetry: Eugenio Montale.** Fall term. Credit four hours. Not offered in 1972-73.]

**639 Special Topics in Italian Literature: The Carnival, a Tradition of Low Literature.** Fall term. Credit four hours. W 2:30-4:30.

Structure and origins of Carnival. From the myth of Cockaigne to Pulci, Berni, and Folengo.

**649 Graduate Tutorials.** Fall term. Credit four hours. Hours to be arranged. Staff.

## Japanese

Mrs. Eleanor Jorden, Mr. J. McCoy, Mrs. Etsuko Terasaki.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. M-F 9:05 or 12:20, and M W F 10:10.

**201-202 Elementary Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: Japanese 102. M W F 1:25.

**203-204 Intermediate Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: Japanese 102. M W F 2:30.

**301-302 Intermediate Reading.** 301 fall term only; 302 spring term only. Credit four hours a term. Prerequisite: Japanese 202 or consent of the instructor. Hours to be arranged. Mrs. Terasaki. Reading of selected modern texts with emphasis on expository style.

**305-306 Introduction to Literary Japanese.** 305 fall term only; 306 spring term only. Credit four hours a term. Prerequisite: Japanese 202 or consent of the instructor. Hours to be arranged. Mrs. Terasaki.

**401-402 Advanced Reading.** 401 fall term only; 402 spring term only. Credit four hours a term. Prerequisite: Japanese 302 or consent of the instructor. Hours to be arranged. Mrs. Terasaki.

**404 Linguistic Structure of Japanese.** Spring term. Credit four hours a term. Prerequisite: Japanese 102 or consent of the instructor, and Linguistics 201. Hours to be arranged. Mrs. Jorden and Mr. McCoy.

**405-406 Intermediate Literary Japanese.** 405 fall term only; 406 spring term only. Credit four hours a term. Prerequisite: Japanese 306 or consent of the instructor. Hours to be arranged. Mrs. Terasaki.

**421-422 Directed Readings.** 421 fall term only; 422 spring term only. Credit four hours a term. Prerequisite: Japanese 402 or consent of the instructor. Hours to be arranged. Topics will be selected on the basis of student needs.

**[431-432 Introduction to Japanese Reading for Students of Chinese.** 431 fall term only; 432 spring term only. Credit three hours a term. Prerequisite: consent of the instructor. Hours to be arranged. Mrs. Jorden and Mr. McCoy. Not offered in 1972-73.]

## Javanese

Messrs. J. M. Echols, J. U. Wolff.

**131-132 Elementary Course.** 131 fall term only; 132 spring term only. Credit three hours a term. Prerequisite: Qualification in Indonesian. Hours to be arranged.

**133-134 Intermediate Course.** 133 fall term only; 134 spring term only. Credit three hours a term. Prerequisite: Javanese 132 or the equivalent. Hours to be arranged.

## Linguistics

Messrs. F. B. Agard, L. H. Babby, N. C. Bodman, J. S. Bowers, J. M. Echols, C. E. Elliott, J. W. Gair, J. E. Grimes, R. A. Hall, Jr., C. F. Hockett, R. B. Jones, Jr.; Mrs. Eleanor Jorden; Messrs. G. B. Kelley, H. L. Kufner, R. L. Leed, P. Lowe, Jr., A. G. Lozano, G. M. Messing, J. McCoy, J. S. Noblitt; Mrs. Linda Sangster; Messrs. D. F. Solá, F. C. van Coetsem, J. F. Vigorita, J. U. Wolff.

### Linguistics Major

The major in linguistics has three prerequisites: (1) Linguistics 201-202; (2) Qualification in two languages, one from the familiar European group (Latin, Greek, French, Italian, Portuguese, Spanish, German, Russian) and one from the other languages offered at Cornell, with six hours beyond Qualification in one or the other of these two; (3) a two-semester sequence in a related discipline (e.g. the literature of the language in which six hours beyond Qualification was offered as a prerequisite, anthropology, computer science, mathematics, philosophy, psychology, or sociology). Completion of the major requires: (1) Linguistics 301, 303, 304; (2) a course in historical linguistics, either a course in historical method such as Linguistics 502 or the history of a specific language or family; (3) a minimum of eight additional hours in linguistics chosen in consultation with the adviser. Prospective majors should see Mr. Gair.

### Distribution Requirement

Linguistics 201-202, or the combination Linguistics 201 and any other course for which Linguistics 201 is a prerequisite, satisfies the Distribution requirement in the social sciences.



**201-202 Introduction to the Scientific Study of Language.** 201 fall term only; 202 spring term only. Credit three hours a term. Lecture, M W F 9:05, 10:10, or 11:15. Messrs. Gair, Kufner, Wolff.

An introductory survey course designed to acquaint the student with the nature of human language and with its systematic study.

**207 Practical Phonetics.** Fall term. Credit three hours. Prerequisite: Linguistics 202. M W 3:35-4:50. Mr. Agard.

#### **Linguistics and Psychology (Psychology 215).**

**301-302 The Structure of English.** 301 fall term only; 302 spring term only. Credit four hours a term. Prerequisite: Linguistics 201-202 or consent of the instructor. M W F 11:15. Mr. Elliott.

The first term is devoted to a study of the structure of English from the point of view of modern transformation analysis. Emphasis is on enabling students to develop the skills of analysis, though current works on English grammar are also examined. The second term is divided into two segments. In the first segment, approaches to the semantic interpretation of English sentences are examined as a part of linguistic analysis. The second segment is devoted to practical application of linguistics to the teaching of English as a second language.

**303 Phonology.** Fall term. Credit four hours. Prerequisite: Linguistics 201. T Th 3:35-4:50. Mr. Grimes.

**304 Morphology.** Spring term. Credit four hours. Prerequisite: Linguistics 201. T Th 3:35-4:50. Mr. Grimes.

**306 Syntax.** Spring term. Credit four hours. Prerequisite: consent of the instructor. T Th 11:15-1:10. Mr. Solá.

**[331 India as a Linguistic Area.** Fall term. Credit four hours. Given in alternate years. Prerequisite: Linguistics 201. Not offered in 1972-73.]

**401 Linguistic Structures.** Fall term. Credit four hours. Prerequisite: consent of the instructor. T 11:15, Th 11:15-1:10. Mr. Jones.

**406 Dialectology.** Spring term. Credit four hours. Given in alternate years. W 1:25-3:20. Mr. Hall.

**413-414 Linguistic Data Processing.** 413 fall term only; 414 spring term only. Credit two hours a term. Prerequisites: Linguistics 201-202 and consent of the instructor. T Th 1:25; laboratory hours to be arranged.

**420 Applied Linguistics and Second-Language Acquisition.** Fall term. Credit four hours. Prerequisite: structure of a language at 400 level. T Th 3:35. Mr. Noblitt. Theoretical considerations contributing to a psycholinguistic model of second-language acquisition. Emphasis is placed on the specification of the learning task rather than on methodology.

**422 Contrastive Analysis.** Spring term. Credit four hours. Prerequisite: consent of the instructor. T Th 3:35-4:50. Mr. Agard.

Linguistic theory applied to the contrasting of any two or more languages, on a synchronic basis and without regard to their genetic relationships.

**[432 Indo-Aryan Structures.** Either term according to demand. Credit four hours. Prerequisite: Linguistics 202. Hours to be arranged. Mr. Gair. Not offered in 1972-73.]

**[436 Dravidian Structures.** Either term according to demand. Credit four hours. Prerequisite: Linguistics 202. Mr. Kelley. Not offered in 1972-73.]

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the graduate Field representative.

**502 Comparative Methodology.** Spring term. Credit four hours. Prerequisites: Linguistics 201-202. Th 1:25-3:20. Mr. Jones.

**[504 History of Linguistics.** Spring term. Credit four hours. Given in alternate years. W 1:25-3:20. Not offered in 1972-73.]

**[505 Literature, Language, and Culture.** Fall term. Credit four hours. Given in alternate years. W 1:25-3:20. Not offered in 1972-73.]

**508 Field Methods.** Spring term. Credit four hours. M W F 9:05. Mr. Hockett.

**509 Pidgin and Creole Languages.** Fall term. Credit four hours. W 1:25-3:20. Mr. Hall.

**513-514 Transformational Grammar: Syntax and Semantics.** 513 fall term only; 514 spring term only. Credit four hours a term. First term prerequisite to second. T Th 10:10-12:05. Mr. Bowers. Fall: Introduction to the theory of syntax within a generative/transformational framework. Spring: Advanced course on syntax and the relation of syntax to semantics.

**[515-516 Sociolinguistics.** 515 fall term only; 516 spring term only. Credit four hours a term. Given in alternate years. Prerequisite: consent of the instructor. Mr. Kelley. Not offered in 1972-73.]

**520 Topics in Transformational Grammar.** Either term. Credit three hours. Prerequisite: consent of the instructor. W 3-5. Mr. Bowers and Mr. Elliott.

**521-522 Comparative Indo-European Linguistics.** 521 fall term only; 522 spring term only. Credit four hours a term. Given in alternate years. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Messing.

**523-524 Generative Phonology.** 523 fall term only; 524 spring term only. Credit four hours a term. First term prerequisite to second. Hours to be arranged. Mr. Bowers. Fall: Introduction to phonology within a generative/transformational framework. Spring: Advanced course in generative phonology.

**[530 Elementary Pali.** Either term according to demand. Credit three hours. Hours to be arranged. Mr. Gair. Not offered in 1972-73.]

**[531-532 Elementary Sanskrit.** 531 fall term only; 532 spring term only. Credit three hours a term. Given in alternate years. T Th 10:10. Mr. Vigorita. Not offered in 1972-73.]

**534 Comparative Indo-Aryan.** Spring term. Credit four hours. Prerequisite: Linguistics 201 and a basic course in an Indo-Aryan language, or consent of the instructor. Hours to be arranged. Mr. Gair.

**536 Comparative Dravidian.** Spring term. Credit four hours. Prerequisites: Linguistics 201 and a basic course in a Dravidian language, or consent of the instructor. Hours to be arranged. Mr. Kelley.

**537-538 Old Javanese.** 537 fall term only; 538 spring term only. Credit four hours a term. Hours to be arranged. Mr. Echols.

**[541-542 Old Irish.** 541 fall term only; 542 spring term only. Credit four hours a term. Given in alternate years. M T W Th 9:05. Mr. Vigorita. Not offered in 1972-73.]

**543-544 Middle Welsh.** 543 fall term only; 544 spring term only. Credit four hours a term. Given in alternate years. M T W Th 9:05. Mr. Vigorita.

**546 Comparative Celtic Grammar.** Spring term. Credit four hours. Prerequisite: one Celtic language or consent of the instructor. M W F 10:10. Mr. Vigorita.

**[550 Discourse Analysis.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Grimes. Not offered in 1972-73.]

**[561-562 Comparative Slavic Linguistics.** 561 fall term only; 562 spring term only. Credit four hours a term. Given in alternate years. Hours to be arranged. Not offered in 1972-73.]

**571-572 Seminar in Southeast Asian Languages.** 571 fall term only; 572 spring term only. Credit four hours a term. Prerequisite: Linguistics 201-202 and consent of the instructor. Hours to be arranged. Mr. Jones.

**573-574 Malayo-Polynesian Linguistics.** 573 fall term only; 574 spring term only. Credit four hours a term. Prerequisite: Linguistics 201-202 and consent of the instructor. Hours to be arranged. Mr. Wolff.

**577 Thai Dialectology.** Fall term. Credit four hours. Prerequisite: Linguistics 201-202 and consent of the instructor. Th 2:30-4:25. Mr. Jones.

**578 Comparative Thai.** Spring term. Credit four hours. Prerequisite: Linguistics 502 or equivalent and consent of the instructor. Th 2:30-4:25. Mr. Jones.

**579 Tibeto-Burman Linguistics.** Fall term. Credit four hours. Prerequisite: Linguistics 502 or equivalent and consent of the instructor. T 2:30-4:25. Mr. Jones.

**582 Sino-Tibetan Linguistics.** Spring term on student demand. Credit four hours. Prerequisite: Linguistics 201-202 or Chinese 401-402 and consent of the instructor. Th 2:30-4:25. Mr. Bodman.

**[583 Contrastive Vietnamese and Chinese Grammar.** Either term. Credit three hours. Prerequisite: consent of the instructor. Hours to be arranged. Not offered in 1972-73.]

**600 Seminar.** Either term. Credit to be arranged. Prerequisite: consent of the instructor. Hours to be arranged. Staff.

#### 615-616 Directed Research.

Related linguistics courses offered in other departments are: Anthropology 302; Classics 421, 422; English 383, 501, 510; Philosophy 215, 415, 590, 595; and Psychology 215, 313, 416.

## Portuguese

Mr. F. B. Agard.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. M-F 2:30, and an additional two hours to be arranged.

**131-132 Elementary Course.** 131 fall term only; 132 spring term only. Credit three hours a term. Prerequisite: Qualification in Spanish and consent of the instructor. M W F 10:10 and an additional hour to be arranged. A basic course designed principally for students majoring in Spanish or interested especially in Portugal or Brazil. Phonology, grammar, listening comprehension, and reading.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: for 203, Qualification in Portuguese; for 204, Portuguese or consent of the instructor. M-F 11:15.

**303-304 Advanced Composition and Conversation.** 303 fall term only; 304 spring term only. Credit four hours a term. Prerequisite: Portuguese 204. Hours to be arranged.

**305-306 Advanced Readings.** 305 fall term only; 306 spring term only. Credit four hours a term. Prerequisite: Portuguese 304. Hours to be arranged. Designed for students needing further practice in reading Portuguese that is not literary.

## Quechua

Mr. D. F. Solá.

**133-134 Intermediate Course.** 133 fall term only; 134 spring term only. Credit three hours a term. Prerequisite: Qualification in Spanish, and Quechua 101S (see *Announcement of the Summer Session*) or comparable experience. T Th 11:15-1:10.

An intermediate conversation and reading course. Intensive study of the Huarochiri manuscript.

**600 Seminar in Quechua Linguistics.** Either term. Credit to be arranged. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Solá.

## Romance Linguistics

Messrs. F. B. Agard and R. A. Hall, Jr.

**441-442 History of the Romance Languages.** 441 fall term only; 442 spring term only. Credit four hours a term. Given in alternate years. T Th 1:25-2:40. Mr. Agard.

**[443-444 Comparative Romance Linguistics.** 443 fall term only; 444 spring term only. Credit four hours a term. Given in alternate years. T Th 1:25-2:40. Not offered in 1972-73.]

**[445 Problems and Methods in Romance Linguistics.** Fall term. Credit four hours. Given every third year. W 1:25-3:20. Not offered in 1972-73.]

**[446 Romance Dialectology.** Spring term. Credit four hours. Given every third year. M W F 9:05. Not offered in 1972-73.]

**450 Areal Topics in Romance Linguistics.** Either term. Credit four hours. M W F 9:05. Mr. Agard or Mr. Hall. May be repeated for credit.

## Russian

Messrs. L. Babby, R. Brecht; Ms. Patricia Carden; Messrs. H. W. Chalsma, G. Gibian; Ms. Antonia Glaspe; Mr. R. L. Leed; Ms. Alla Novosilzov; Mr. V. Ripp.

### Russian Major

Russian majors study Russian language, literature, and linguistics, with emphasis placed in accordance with their specific interests.

It is desirable, although not necessary, for a prospective major to complete Russian 101-102, 201-202, 203-204 as a freshman or sophomore since these courses are prerequisite to most of the junior and senior courses which count toward the major. A student may be admitted to the major upon satisfactory completion of Russian 102 or the equivalent.

Students who elect to major in Russian should consult with Mr. Gibian or Mr. Leed as soon as possible.

For a major in Russian a student will be required to complete: (1) Russian 303-304 or the equivalent; (2) twenty-four hours from 300- and 400-level literature and linguistics courses of which twelve hours must be in literature in the original.

Prospective teachers of Russian in secondary schools should take Linguistics 201 in the freshman or sophomore year, followed by Russian 403-404.

### The Honors Program

Students taking Honors in Russian undertake individual reading and research, write an Honors essay, and take a comprehensive examination at the end of the senior year.

### Distribution Requirement

The Distribution requirement in the humanities is satisfied in Russian by Russian literature courses on the 200-level and above.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Students who have previously studied Russian should consult p. 91 before registering for this course. Drill, M-F 8, 9:05, 10:10, 11:15, or 12:20; lectures, M W 2:30 or T Th 11:15.

**103 Freshman Seminar: Russian Literature.** Either term. Credit three hours a term. For course description, see Freshman Seminars Program, p. 31.

**131S-132S, 133S-134S Elementary Course in Slavic Languages.** 131S and 133S fall term only; 132S and 134S spring term only. Credit three hours a term. Prerequisite: Qualification in Russian or consent of the instructor. Hours to be arranged. Staff.

In a given year one of the following languages will be offered according to demand: Serbo-Croatian, Bulgarian, Slovenian, Polish, or Czech.

**131-132 Elementary Reading Course I.** 131 fall term only; 132 spring term only. Credit three hours a term. Students who have previously studied Russian should consult p. 91 before registering for this course. Sections: M W F 8, 11:15, 12:20, or 3:35; lecture, T 2:30 or W 1:25.

**133-134 Elementary Reading Course II.** 133 fall term only; 134 spring term only. Credit three hours a term. Prerequisite: Russian 132 or the equivalent. Sections: Fall, M W F 1:25 or 3:35; spring, M W F 3:35; lecture, Th 2:30.

**201-202 Introduction to Russian Literature.** Throughout the year. Credit three hours a term. Prerequisite: Qualification in Russian. M W F 10:10. Mr. Ripp. Completion of this series is the prerequisite for all 300- and 400-level courses where the reading is done in Russian. Open to Freshmen as a Humanities Seminar.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: Qualification in Russian. M W F 10:10, 12:20 or 1:25; lecture T 9:05 or 10:10.

**207 Russian Literature (Formerly Comparative Literature 207).** Fall term. Credit three hours. Enrollment limited to 60 students. M W F 12:20. Ms. Carden. Readings in English translation. Pushkin, Gogol, Turgenev, and Goncharov.

**208 Russian Literature (Formerly Comparative Literature 208).** Spring term. Credit three hours. Enrollment limited to 60 students. Students who took 207 have priority in registering for 208. M W F 12:20. Mr. Chalsma. Readings in English translation. Dostoevsky, Tolstoy, Chekhov, Babel, and others.

**292 Supervised Reading in Russian Literature.** Either term. Variable credit. By initiation of the Department.

**301-302 Advanced Russian Morphology and Syntax.** 301 fall term only; 302 spring term only. Credit four hours a term. Prerequisite: Russian 202 or 203. Hours to be arranged. Mr. Babby.

**303-304 Advanced Composition and Conversation.** 303 fall term only; 304 spring term only. Credit four hours a term. Prerequisite: for 303, Russian 204. M W F 11:15 and an additional hour to be arranged. Mrs. Novosilzov. Emphasis is placed upon increasing the student's oral and written command of Russian. Advanced grammar, syntax, usage, idiomatic expressions. Oral reports, group discussion, selected readings of classic and Soviet writers.

**312 Background of Russian Culture.** Spring term. Credit four hours. M W F 1:25. Ms. Glasse. Consideration of the patterns and evolution of Russian culture from the earliest times to the present. Topics will include: folklore and folk art; mythology; customs, traditions, and social organization of pagan society; Christianization of Russia; theology and ecclesiastical

organization; trade; relations with neighboring cultures; life in medieval Russia; contact with the West; development of urban and commercial classes; social life and material structure of the Russian people from the middle of the nineteenth century until today.

**[314 Intellectual Background of Russian Literature, 1750-1860.** Spring term. Credit four hours. Conducted in Russian. M W F 12:20. Ms. Glasse. Not offered in 1972-73.]

**331 Russian Poetry.** Fall term. Credit four hours. Prerequisite: Russian 202 and consent of the instructor. T Th 1:25 and an additional hour to be arranged. Mr. Gibian.

**332 Russian Theatre and Drama.** Spring term. Credit four hours. Conducted in English. M W F 10:10. Ms. Glasse.

A survey of Russian theatre and drama from the beginning to the present time. Selections will include plays of Gogol, Ostrovskii, Chekhov, Gorki, Mayakovskii. A major portion of the course will deal with contemporary Soviet theatre. Reading in translation.

**367 The Russian Novel in Translation (Formerly Comparative Literature 367).** Fall term. Credit four hours. T Th 9:05 and one hour to be arranged. Mr. Gibian. Works by Turgenev, Dostoevsky, Tolstoy, and others.

**368 Soviet Literature in Translation (Formerly Comparative Literature 368).** Spring term. Credit four hours. T Th 9:05 and one hour to be arranged. Mr. Gibian. An introduction to selected works of Russian literature, from 1917 to date, examined as works of art and as social and historical documents.

**369 Dostoevsky.** Spring term. Credit four hours. T Th S 11:15. Mr. Chalsma.

**401-402 History of the Russian Language.** 401 fall term only; 402 spring term only. Credit four hours a term. Given in alternate years. Prerequisite: Qualification in Russian, and Linguistics 201. Hours to be arranged. Mr. Leed.

**403 Linguistic Structure of Russian.** Fall term. Credit four hours. Prerequisite: Qualification in Russian, and Linguistics 201-202. Hours to be arranged. Mr. Babby. A synchronic study and analysis of Russian linguistic structure; the fall semester will deal primarily with phonology and morphology. Syntax will be treated in Russian 406.

**[404 Russian for Teachers.** Spring term in alternate years. Credit four hours. Prerequisite: Qualification in Russian, Linguistics 201, and Russian 403. Hours to be arranged. Mr. Leed. Methods of teaching the language based on a contrastive study of the structures of English and Russian. Extensive outside reading, reports on textbooks, discussion of various teaching aids and realia. Required for provisional New York State teacher certification. Not offered in 1972-73.]

**406 Linguistic Structure of Russian.** Spring term. Credit four hours. Prerequisite: Qualification in Russian, Linguistics 201-202, and Russian 403. Hours to be arranged. Mr. Babby.

A synchronic study and analysis of Russian linguistic structure; the spring semester will deal primarily with syntax.

**421 Supervised Reading and Research.** Either term. Credit to be arranged. Prerequisite: consent of the Department of Russian Literature.

**431 Russian Prose Fiction.** Spring term. Credit four hours. Prerequisite: Russian 202 or the equivalent, and consent of the instructor. T Th 2:30 and an additional hour to be arranged. Mr. Ripp.

**432 Pushkin.** Spring term. Credit four hours. Prerequisite: Russian 202 or the equivalent, and consent of the instructor. T Th 1:25. Mr. Gibian.

**435 Gogol.** Fall term. Credit four hours. Prerequisite: Russian 202 or the equivalent, and consent of the instructor. M W F 10:10. Ms. Glasse.

**436 Politics and the Novel.** Fall term. Credit four hours. T Th 2:30 and one hour to be arranged. Mr. Ripp. A consideration of the link between mid-nineteenth-century Russian social movements and literature. Attention to non-Russian parallels. Reading includes Herzen, Chernyshevsky, Dostoevsky, Turgenev.

**450 Practice Teaching.** Either term. Credit six hours. Prerequisite: Russian 403 (the methods course, Russian 404 can be taken concurrently with practice teaching). Open only to students enrolled in a teacher preparation program. Students will observe, and then participate in teaching classes in the secondary school system. They will also get acquainted with a language laboratory.

**[Origins of the Avant-Garde (Comparative Literature 472).** Spring term. Credit four hours. Enrollment limited to 30 students. Prerequisite: consent of the instructor. M W F 2:30. Ms. Carden. Not offered in 1972-73.]

**493 Honors Essay Tutorial.** Either term. Credit four hours.

For complete descriptions of courses numbered 500 and above, see the *Announcement of the Graduate School: Course Descriptions*. If the course is not included there, consult the appropriate graduate Field representative.

**501 Old Church Slavic.** Fall term. Credit four hours. Hours to be arranged. Mr. Brecht.

**502 Old Russian.** Spring term. Credit four hours. Hours to be arranged. Mr. Brecht.

**Comparative Slavic Linguistics (Linguistics 561-562).**

**[517 Russian Stylistics.** Fall term. Credit four hours. Conducted in Russian. M W F 11:15. Ms. Glasse. Not offered in 1972-73.]

**[518 Russian Stylistics.** Spring term. Credit four hours. Conducted in Russian. Hours to be arranged. Ms. Glasse. Not offered in 1972-73.]

**520 Studies in Russian Poetry.** Spring term. Credit four hours. M W F 2:30. Mr. Chalsma.

**[521 Russian Literature from the Beginnings to 1700.** Fall term. Credit four hours. M W 3:30-4:30. Ms. Carden. Not offered in 1972-73.]

**522 Eighteenth-Century Literature.** Fall term. Credit four hours. M W F 1:25. Conducted in Russian. Ms. Glasse.

**[523 Early Nineteenth-Century Literature.** Spring term. Credit four hours. Hours to be arranged. Conducted in Russian. Prerequisite: Russian 522 or consent of the instructor. Ms. Glasse. Not offered in 1972-73.]

**[524 Russian Romanticism.** Fall term. Credit four hours. Conducted in Russian. M W F 1:25. Ms. Glasse. Not offered in 1972-73.]

**[528 Topics in Soviet Literature.** Fall term. Credit four hours. M W F 2:30. Not offered in 1972-73.]

**600 Seminar in Slavic Linguistics.** According to demand. Credit four hours. Hours to be arranged. Messrs. Babby, Brecht, or Leed.

**601 Introduction to Graduate Study.** Fall term. Credit four hours. S-U grades only. T 3:35-5:30. Mr. Gibian and Staff.

**[611 Seminar in Russian Dialect Geography.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Leed. Not offered in 1972-73.]

**[671 Seminar in Nineteenth-Century Russian Literature.** Fall term. Credit four hours. Th 3:35-5:30. Mr. Gibian. Not offered in 1972-73.]

**672 Seminar in Twentieth-Century Russian Literature.** Fall term. Credit four hours. Th 3:35-5:30. Ms. Carden. Topic for 1972: Modernism in Russian Prose.

## Sinhalese

Mr. J. W. Gair.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. M-F 9:05 and T Th 10:10.

**201-202 Sinhalese Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: Qualification in Sinhalese. Hours to be arranged.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: for 203, Sinhalese 202 or consent of the instructor. Hours to be arranged.

(See also Linguistics 331, 432, 521, 530, 531, 534.)

## Spanish

Messrs. F. B. Agard, C. M.-Arroyo; Mrs. A. Chacona; Messrs. U. I. DeWinter, R. O. González; Miss L. Kerr; Messrs. J. W. Kronik, A. G. Lozano, D. F. Solá.

### Spanish Major

The Spanish major is designed to give the student proficiency in the oral and written language, to acquaint him with the culture of Spain and Spanish America, and to develop his skill in literary analysis. Satisfactory completion of the major should enable the student to meet language and literature requirements for a provisional teaching certificate, to continue with graduate work in Spanish, or to satisfy standards for acceptance into the training programs of the government, social agencies, or business concerns.

The student electing to major in Spanish will work out his plan of studies in consultation with his major adviser. The student's previous training and his interests will be taken into account, and he is encouraged to take related courses in fields such as history, philosophy, anthropology, linguistics, art, music, Classics, English, comparative literature, and other foreign languages and literatures. Interested students are encouraged to seek faculty advice about the major as early as possible. Students interested in Spanish linguistics may consult with the Department of Modern Languages and Linguistics.

The student majoring in Spanish must have had Spanish 201 and 204 or their equivalent and is normally expected to complete: 1) 311-312 and 303-304 or the equivalent of the latter two courses; 2) twenty-four additional hours in Spanish and Spanish-American literature, including at least two 400-level courses; and 3) 403. Students with specific vocational goals that suggest a rearrangement of the above program of courses should consult the director of undergraduate studies. Spanish majors are encouraged to spend all or part of their junior year in Spain or another of the Spanish-speaking countries on one of the study-abroad programs organized by American universities which allow the transfer of grades and credits.

The J. G. White Prizes and Scholarships are available annually to students who achieve excellence in Spanish. For acceptance into the major the student must have approval of the chairman of the Department of Romance Studies and of that Department's director of undergraduate studies in Spanish, Miss Kerr.



## The Honors Program

The Honors program in Spanish is open to superior students who wish to undertake guided independent reading and research in an area of their choice. The student in his senior year selects a member of the Spanish faculty who will supervise his work and direct the writing of his Honors essay.

## Teacher Preparation Programs

Cornell offers two teacher preparation programs in modern languages: one at the graduate level (M.A.T.), one at the undergraduate level (leading to provisional certification, valid five years). For information, consult either the Department of Modern Languages and Linguistics or the Department of Romance Studies.

## Distribution Requirement

The Distribution requirement in the humanities is satisfied in Spanish by any two of the following courses: Spanish 201, 311, 312.

Of the courses listed below, those dealing with literature are staffed and administered by the Department of Romance Studies, and inquiries in regard to them should be addressed to that Department (Goldwin Smith 278).

The courses dealing with language and linguistics are offered and administered by the Department of Modern Languages and Linguistics (Morrill 106).

## Language and Linguistics

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Students who have previously studied Spanish should consult p. 91 before registering for this course. Fall term: Drill M-F 8, 9:05, 10:10, 12:20; lecture, M W 2:30. Spring term: Drill M-F 8, 9:05, 10:10, 11:15; lecture, M W 2:30.

**131-132 Elementary Reading Course I.** 131 fall term only; 132 spring term only. Credit three hours a term. Students who have previously studied Spanish should consult p. 91 before registering for this course. M W F 11:15 or 12:20.

**133-134 Elementary Reading Course II.** 133 fall term only; 134 spring term only. Credit three hours a term. Prerequisite: Spanish 132 or the equivalent. Fall term: M W F 11:15, 12:20 or 1:25; Spring term: M W F 9:05 or 1:25.

**203 Intermediate Composition and Conversation.** Either term. Credit three hours. Prerequisite: Qualification in Spanish (for definition of Qualification see p. 16). Fall term: M W F 8, 9:05, 11:15, 12:20 or 1:25. Spring term: M W F 8, 12:20, or 1:25. Guided conversation, grammar review, and oral and written composition. Emphasis is on increasing the student's oral and written command of Spanish.

**204 Intermediate Composition and Conversation.** Spring term. Credit three hours. Prerequisite: Spanish 203. M W F 9:05, 10:10, or 11:15. The study of advanced grammar. Exercises designed to improve the student's ability to speak, read, and write Spanish.

**303-304 Advanced Composition and Conversation.** 303 fall term only; 304 spring term only. Credit four hours a term. Prerequisite: Spanish 204. M W F 10:10. The study of fundamental aspects of style in standard spoken Spanish; advanced problems in comparative usage in English and Spanish. Frequent oral and written reports in Spanish are required. Extensive reading in current Spanish language publications. The study of fundamental

aspects of style in standard written Spanish. Cultural content is oriented to Spain in the fall semester and to Spanish America in the spring semester.

**401 History of the Spanish Language.** Fall term. Credit four hours. Prerequisite: Qualification in Spanish, and Linguistics 201. T Th 1:25-2:40. Mr. Solá.

**402 Old Spanish Texts.** Spring term. Credit four hours. Prerequisite: Qualification in Spanish. T Th 1:25-2:40. Mr. Solá.

**403 The Grammatical Structure of Spanish.** Fall term. Credit four hours. Prerequisite: Qualification in Spanish, and Linguistics 201. M W F 2:30. Mr. Lozano. Descriptive analysis of the morphological and syntactical structure of present-day standard Spanish.

**404 Spanish for Teachers.** Spring term. Credit four hours. Prerequisite: Qualification in Spanish, and Linguistics 201. M W F 2:30. Mr. Lozano. A course in methodology and applied linguistics for prospective teachers of the Spanish language. A survey of current attitudes, methods, materials, and techniques. The application of descriptive linguistics to the organization of lesson material, illustrated mainly through the contrastive study of Spanish and English phonology. Required for provisional New York State teacher certification.

**The Comparative Study of the Romance Languages.** See Linguistics 441-442, 443-444, 445, 446, 450.

**450 Practice Teaching.** Either term. Credit six hours. Prerequisite: Spanish 403 (the methods course, Spanish 404 can be taken concurrently with practice teaching). Open only to students enrolled in a teacher preparation program. Students will observe, and then participate in teaching classes in the secondary school system. They will also get acquainted with a language laboratory.

For complete descriptions of courses numbered 500 or above, see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

**501 Linguistic Structures of Ibero-Romance.** Fall term. Credit four hours. Prerequisite: consent of the instructor. M W F 1:25. Mr. Lozano. Given every third year.

**[502 Hispanic Dialectology.** Fall term. Credit four hours. Prerequisite: consent of the instructor. T Th 1:25-2:40. Mr. Solá. Given every third year; scheduled for 1973-74.]

**[503 Contemporary Theories of Spanish Phonology.** Fall term. Credit four hours. Given every third year; scheduled for 1974-75. Prerequisite: consent of the instructor. T Th 3-4:15. Mr. Solá.]

**[504 Contemporary Theories of Spanish Grammar.** Spring term. Credit four hours. Given every third year; scheduled for 1974-75. Prerequisite: consent of the instructor. M W F 1:25. Mr. Lozano.]

**600 Seminar in Ibero-Romance Linguistics.** According to demand. Credit four hours. Hours to be arranged.

## Literature

**105 Permanence and Revolution in Twentieth-Century Spanish-American Prose Fiction.** Fall term. Credit three hours. M W F 2:30. Mr. González. For description see Freshman Seminars Program p. 31.

**106 From Escape to Confrontation: The Modern Spanish Drama (in translation).** Spring term. Credit three hours. M W F 9:05. Mr. Kronik. For description see Freshman Seminars Program p. 31.

**201 Introduction to Hispanic Literature.** Either term. Credit three hours. Prerequisite: Qualification in Spanish or consent of the instructor. Fall term: M W F 8:00, 1:25, 2:30; T Th S 9:05. Spring term: M W F 8:00, 1:25;

T Th S 9:05. Mr. DeWinter, Mr. Kronik, and staff.  
An intermediate reading course in which texts of established quality are read and analyzed. The course is designed to develop reading and speaking facility in Spanish and to develop methods and habits of critical appreciation of literary texts. Class conducted mainly in Spanish. The literature course that normally follows Spanish 201 is Spanish 311 or 312.

**311 Masterpieces of Hispanic Literature.** Spring term. Credit four hours. Prerequisite: Spanish 201 or four years of entrance Spanish or consent of the instructor. This course is not prerequisite to 312. T Th 1:25–2:40. Mr. González.

Reading and discussion of representative works of Spanish literature. Works are read in their entirety. The texts read are primarily from the Renaissance and the Golden Age. Conducted in Spanish.

**312 Masterpieces of Hispanic Literature.** Throughout the year. Credit four hours a term. Prerequisite: Spanish 201 or four years of entrance Spanish or consent of the instructor. Fall term: M W F 11:15. Spring term: M W F 9:05. Mr. DeWinter.

Reading and discussion of representative works of Spanish and Spanish-American literature dealing with the nineteenth and twentieth centuries. Conducted in Spanish.

**313 Spanish Civilization.** Fall term. Credit four hours. Prerequisite: Spanish 311 or 312 or consent of the instructor. M W F 1:25. Mr. Arroyo.

A study of the main periods of Spanish political and intellectual history, with focus also on Spanish art, the relations between Spain and America, etc. Conducted in Spanish.

**[329 Spanish-American Literature to "Modernismo."** Fall term. Credit four hours. Not offered in 1972–73.]

**[330 Spanish-American Literature from "Modernismo" to the Present.** Spring term. Credit four hours. Not offered in 1972–73.]

**[331 The Twentieth-Century Spanish-American Drama.** Fall term. Credit four hours. Not offered in 1972–73.]

**334 The Spanish-American Short Story.** Fall term. Credit four hours. Prerequisite: Spanish 311 or 312 or consent of the instructor. M W F 12:20. Miss Kerr.  
The development of the Spanish-American short story in the twentieth century, as represented by three masters from the River Plate region: Quiroga, Borges, Cortázar. Readings in and on the tradition of the *cuento*. Conducted in Spanish.

**[336 The Modern Spanish-American Novel.** Spring term. Credit four hours. Not offered in 1972–73.]

**[338 Modern Spanish-American Poetry.** Spring term. Credit four hours. Not offered in 1972–73.]

**361 Drama of the Spanish Golden Age.** Fall term. Credit four hours. Prerequisite: Spanish 311 or 312 or consent of the instructor. M W F 11:15. Mr. González.  
A study of the major plays and theatrical trends of the sixteenth and seventeenth centuries, with emphasis on the works of Lope de Vega, Tirso de Molina, and Calderón de la Barca. Conducted in Spanish.

**[389 The Generation of 1898.** Fall term. Credit four hours. Not offered in 1972–73.]

**392 The Post-Civil War Drama in Spain (Formerly Spanish 492).** Spring term. Credit four hours. Prerequisite: Spanish 311 or 312 or consent of the instructor. M W F 10:10. Mr. Kronik.

A study of contemporary Spain's "theater of protest and paradox" from Buero Vallejo and Sastre to Arrabal, with a preliminary discussion of García Lorca. Conducted in Spanish.

**393 The Spanish Essay of the Twentieth Century.** Fall term. Credit four hours. Prerequisite: Spanish 311 or 312 or consent of the instructor. M W F 10:10. Mr. Arroyo.  
A study of the most important themes of the modern Spanish essay: the nature and destiny of man; the problem of Spain; esthetic ideas. Readings from Unamuno, Ortega y Gasset, Laín Entralgo, Aranguren, Castro, Dámaso Alonso, Bousoño, Sastre. Conducted in Spanish.

**[395 The Post-Civil War Novel in Spain.** Fall term. Credit four hours. Not offered in 1972–73.]

**419–420 Special Topics in Hispanic Literature.** Throughout the year. Credit four hours a term. Prerequisite: consent of the instructor. Staff.  
Guided independent study of specific topics.

**426 Spanish-American Literature from Discovery to Independence (Formerly Spanish 489).** Spring term. Credit four hours. Prerequisite: Spanish 311 or 312 or consent of the instructor. M W 1:25–2:40. Miss Kerr.  
Spanish, Indian, and Mestizo interpretations of America during the colonial period. Conducted in Spanish.

**429–430 Honors Work in Hispanic Literature.** Throughout the year. Credit four hours a term. Prerequisite: senior status and consent of instructor. Staff.

**[440 Medieval Literature.** Spring term. Credit four hours. Not offered in 1972–73.]

**455 The Picaresque Novel.** Fall term. Credit four hours. Prerequisite: consent of the instructor. M W F 9:05. Mr. Arroyo.

The Spanish picaresque from *El Lazarillo* to *Estebanillo González*. The scholastic conception of woman and the characteristics of the feminine and masculine *pícaro*. The passivity of the *pícaro* and the primitive structure of the novels. A comparison of the Spanish picaresque with *Gil Blas*, *Simplicissimus*, and *Tom Jones*, with an inquiry into the concept of realism and the rise of the modern novel. Readings in English and Spanish. Class conducted in English.

**[465–466 Cervantes.** Throughout the year. Credit four hours a term. Not offered in 1972–73.]

**[468 Poetry of the Spanish Golden Age.** Spring term. Credit four hours. Not offered in 1972–73.]

**[480 Romanticism in Spain.** Spring term. Credit four hours. Not offered in 1972–73.]

**481 Eighteenth- and Nineteenth-Century Spanish Drama (Formerly Spanish 483).** Fall term. Credit four hours. Prerequisite: Spanish 311 or 312 or consent of the instructor. M W 2:30–3:45. Mr. Kronik.

A survey of the major plays and theatrical trends in Spain during the periods of the neo-classic, romantic, and realistic modes. Conducted in Spanish.

**[486 The Nineteenth-Century Spanish Novel.** Spring term. Credit four hours. Not offered in 1972–73.]

**536 Graduate Seminar in Spanish-American Literature: Carpentier (Formerly Spanish 590).** Spring term. Credit four hours. W 3:35–5:15. Mr. González.

A detailed study of Carpentier's literary production in the context of Spanish American, North American, and European letters of the last forty years. Conducted in Spanish.

**[630 Principles of Esthetics and Literary Criticism.** Fall term. Credit four hours. Not offered in 1972–73.]

**639–640 Special Topics in Hispanic Literature.** Throughout the year. Credit four hours a term. To be taken by all new Ph.D. candidates. Hours to be arranged. Staff.

## Swedish

Mr. J. M. Echols.

**[131-132 Elementary Reading Course.** 131 fall term only; 132 spring term only. Credit three hours a term. Hours to be arranged. Not offered in 1972-73.]

## Tagalog

Mr. J. U. Wolff.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. According to demand. Credit six hours a term. Prerequisite: consent of the instructor. Hours to be arranged.

**201-202 Tagalog Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: Tagalog 102. Hours to be arranged.

**403 Linguistic Structure of Tagalog.** Either term. Credit four hours. Prerequisite: Linguistics 201. Hours to be arranged. Mr. Wolff.

## Tamil

Mr. J. W. Gair

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Hours to be arranged.

## Telugu

Mr. G. B. Kelley.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Drill, M-F 9:05; lecture, T Th 10:10.

**201-202 Telugu Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: Qualification in Telugu. Hours to be arranged. (See also Linguistics 331, 436, 536.)

## Thai

Mr. R. B. Jones, Jr.; Mrs. Ruchira Mendiones.

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. M-F 9:05, T Th 10:10.

**201-202 Thai Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: for 201, Qualification in Thai; for 202, Thai 201. Hours to be arranged. Mr. Jones.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: for 203, Qualification in Thai; for 204, Thai 203. Hours to be arranged. Mr. Jones.

**301-302 Advanced Thai.** 301 fall term only; 302 spring term only. Credit four hours a term. Prerequisite: Thai 201-202 or the equivalent. Hours to be arranged. Mr. Jones.

Selected readings in Thai writings in various fields.

**305-306 Thai Literature.** 305 fall term only; 306 spring term only. Credit four hours a term. Prerequisite: Thai 301-302 or the equivalent. Hours to be arranged. Mr. Jones.

Reading of some of the significant novels, short stories, and letters written since 1850.

**405-406 Directed Individual Study.** 405 fall term only; 406 spring term only. For advanced students. Credit four hours a term. Prerequisite: consent of the instructor. Mr. Jones.

## Vietnamese

**101-102 Basic Course.** 101 fall term only; 102 spring term only. Credit six hours a term. Hours to be arranged.

**201-202 Vietnamese Reading.** 201 fall term only; 202 spring term only. Credit three hours a term. Prerequisite: for 201, Qualification in Vietnamese; for 202, Vietnamese 201. Hours to be arranged.

**203-204 Composition and Conversation.** 203 fall term only; 204 spring term only. Credit three hours a term. Prerequisite: for 203, Qualification in Vietnamese; for 204, Vietnamese 203. Hours to be arranged.

**301-302 Advanced Vietnamese.** 301 fall term only; 302 spring term only. Credit four hours a term. Prerequisite: Vietnamese 201-202 or the equivalent. Hours to be arranged.

**305-306 Vietnamese Literature.** 305 fall term only; 306 spring term only. Credit four hours a term. Prerequisite: Vietnamese 301-302 or the equivalent. Hours to be arranged.

Reading of selections from contemporary literature.

**405-406 Directed Individual Study.** 405 fall term only; 406 spring term only. For advanced students. Credit four hours a term. Prerequisite: consent of the instructor.

## Music

Mr. D. M. Randel, Chairman; Messrs. W. W. Austin, M. Bilson, W. J. Davis, J. T. H. Hsu, K. Husa, S. Lubin; Miss Sonya Monosoff; Messrs. R. M. Palmer, D. R. M. Paterson, B. Phillips, T. A. Sokol, M. W. Stith; Miss Barbara Troxell; Messrs. J. Webster and N. A. Zaslau.

There are two options available to the student planning to major in music. At the core of both options is a program which carries the study of music to an advanced level through the deliberate integration of performance, music theory, and music history. This core program sets standards which the Department of Music believes all serious students of music must meet, regardless of the role which music may ultimately play in their lives.

Option I is designed to allow the student greater opportunity to elect courses in fields other than music.

Option II is designed for the student interested in a more specialized program with a view toward graduate study and a career in music.

*Option I* presupposes some musical background and the satisfactory completion of Music 151-152 by the end of the sophomore year. Students unable to meet the requirements for admission to Music 151 must elect Music 141-142 as freshmen. The student will be expected to pass a keyboard examination at some point during his four years, normally by the end of the sophomore year.

The requirements for the Bachelor of Arts degree with a major in music under Option I include four semester courses in music theory (251-252 and 351-352), three semester courses in music history (381-382 plus one other), and four semesters of participation in a musical organization or ensemble.

*Option II* presupposes considerable musical studies before entering and the satisfactory completion of Music 251-252, normally by the end of the sophomore year.

The requirements for the Bachelor of Arts degree with a major in music under Option II include three semester courses in music theory (351-352 and 353 or 451), three semester courses in music history (381-382 plus one other), and two semesters of participation in a musical organization.

In addition, the student majoring in music under Option II will concentrate in one of the following areas:

A. Theory and Composition. The student concentrating in theory and composition will elect, during his junior and senior years, four additional semester courses in this area plus Music 462 or 463. These courses may include Music 401–402.

B. Music History. The student concentrating in music history will elect, during his junior and senior years, four additional semester courses in this area plus Music 462 or 463. These courses may include Music 401–402. Two of the four may be drawn from the offerings of other departments.

C. Performance. The student who has shown exceptional promise as a performer during his freshman and sophomore years may concentrate in performance by electing, during his junior and senior years, four semesters of private instruction in his major instrument plus two semesters of chamber music. These courses may include Music 401–402.

Students contemplating a program in music under either option should arrange for placement examinations and auditions during the orientation period of the freshman year or earlier if possible. Before entering the major, each student should choose an adviser from among the department's faculty members.

## The Honors Program

The Honors program in music is intended to provide a special distinction to the Department's ablest undergraduate majors. To become a candidate for Honors in music a student must be invited by the faculty at the beginning of the second semester of his junior year. As soon as possible thereafter the student will form a committee of three faculty members to guide and evaluate his Honors work. In his senior year he will enroll in Music 401–402 with the chairman of his Honors committee as instructor. He will be encouraged to formulate a program that will allow him to demonstrate his total musical ability. The level of Honors conferred will be based on the whole range of his independent work in this program of which a major part will culminate in his Honors thesis, composition, or recital, to be presented not later than April 1, and a comprehensive examination to be held not later than May 1.

## Distribution Requirement

The Distribution requirement in the expressive arts is satisfied in music with any six hours in music. A maximum of three hours in courses from Music 331 through 338 and 441 through 444 may be used to satisfy this requirement.

## Facilities

A large collection of recorded music and scores is housed in the Department of Music, where listening facilities are provided in the Music Library. These facilities may be used by any member of the student body at hours to be announced each term.

Choral and instrumental ensembles are trained and directed by members of the departmental staff each term, and all students who are interested are invited to join one or more of these groups. These ensembles include the Sage Chapel Choir, the Cornell Chorus, the Cornell University Glee Club, the Bands (Marching Band, Wind Ensemble, Symphonic Band, Brass Ensembles), the Cornell Symphony Orchestra, the Cornell Chamber Orchestra, and chamber music groups. For rehearsal hours and conditions for academic credit, see Music 331 through 338 and 441 through 444. Announcements of tryouts for all organizations will be made at the beginning of the fall term.

## Music Theory

**141–142 Rudiments of Music.** 141 fall term only; 142 spring term only. Credit three hours a term. May not be counted toward the requirements for the major in music. Some familiarity with music is desirable. M W 9:05, and two additional hours to be arranged. Mr. Webster. Designed for students wishing an elementary, self-contained introduction to music theory. Music 141 alone may be taken, but the two-term sequence is a unified course. Fundamental musical techniques, theoretical concepts, and their application. Music 141: Notation, pitch, meter; intervals, scales, triads; basic concepts of tonality; writing of melodies and simple contrapuntal exercises; ear training and dictation. Music 142: More complex contrapuntal exercises; writing in the style of J. S. Bach four-part chorales and two-part inventions; introduction to analysis.

**151–152 Elementary Theory.** 151 fall term only; 152 spring term only. Credit four hours a term. Students intending to major in music under Option II should enroll in Music 151–152 during their freshman year. A knowledge of the rudiments of music and some ability to perform are required for admission. Registration for this course is provisional, depending upon the demonstration of adequate background and ability in proficiency tests given at the beginning of the term. M W F 9:05 and Th 2:30. Mr. Paterson.

Designed for students expecting to major in music and other qualified students. An integrated theory course required for admission to the music major. Detailed study of the fundamental elements of tonal music: rhythm, scales, intervals, triads; melodic movement, two-part counterpoint, harmonic progression in the chorale style of J. S. Bach; and introduction to analysis of small forms. Drill in aural discrimination, sight singing, keyboard harmony, and elementary figured bass; rhythmic, melodic, and harmonic dictation; and score reading.

**251–252 Intermediate Theory.** 251 fall term only; 252 spring term only. Credit four hours a term. Prerequisite: Music 152 or the equivalent. M W F 10:10, Th 1:25–3:00. Mr. Hsu.

Continuation of study and writing in the chorale style of J. S. Bach, concentrating on seventh chords; also study of secondary dominants, modulation, augmented sixth chords, and the Neapolitan. Introduction to writing small forms using piano textures, combined with analysis of larger forms and sonatas. Analysis and writing of two- and three-voice chorale preludes. Ear training, keyboard harmony, and score reading.

**351–352 Advanced Theory.** 351 fall term only; 352 spring term only. Credit four hours a term. Prerequisite: Music 252 or the equivalent. T Th 9:05 and one additional hour to be arranged. Mr. Lubin.

351: Inventions, chromatic harmony, analysis of larger forms and nineteenth-century music, ear training, score reading, and advanced keyboard studies including figured bass. 352: Introduction to some techniques of composers from 1900 to 1950, including expanded tonal resources, atonality, and new approaches to form and rhythm. Analysis of representative smaller works by Bartók, Hindemith, Schoenberg, Stravinsky, Webern, and some American composers. Writing assignments in various styles.

**[451 Modal Counterpoint and Analysis.** Fall term. Credit four hours. Prerequisite: Music 352 or the equivalent. M W Th 12:20. Mr. Palmer. Not offered in 1972–73.]

**[453 Fugue.** Fall term. Credit four hours. Prerequisite: Music 352 or the equivalent. Mr. Palmer. Not offered in 1972–73.]

**[456 Orchestration.** Spring term. Credit four hours. Prerequisite: Music 352 or the equivalent. W 10:10–12:05. Mr. Husa. Not offered in 1972–73.]



**457-458 Composition (Proseminar).** Credit four hours a term. Prerequisite: Music 352 or the equivalent. First term not prerequisite to the second. T 2:30-4:30. Fall term, Mr. Husa; spring term, Mr. Phillips. Problems of writing in the smaller forms and in various media. Class discussion and performance, with analysis of contemporary works. The basic techniques of composition and their extensions in the twentieth century.

**460 Electronic Music Composition.** Spring term. Credit 3 hours. Consent of the instructor is required. Enrollment limited to 20 students. M 1:25-4:15. Mr. Stith and staff. A study of the basic techniques of writing music by electronic means. This will involve musique concrète, tape recorder techniques such as re-recording and splicing. It will also include the use of synthesizers. Works by electronic music composers and readings from a bibliography of the current literature will be studied. Students will be allotted studio time for carrying out class projects and assignments.

**462 Orchestral Conducting.** Spring term. Credit two hours. Prerequisite: Music 352. W 10:10-12:05. Mr. Husa. The fundamentals of score reading and conducting technique. Study of orchestral scores from Baroque, classical, romantic, and contemporary periods. Students will occasionally conduct a small group. Opportunity will also be given to those who qualify to conduct the University Orchestras.

**463 Choral Conducting.** Fall term. Credit two hours. Prerequisite: Music 252 or the equivalent. F 2:30-4:10. Mr. Sokol. A study of the techniques of choral music: conducting, score reading, rehearsing, and arranging music for chorus.

**464 Choral Style.** Spring term. Credit two hours. Prerequisite: Music 352 or the equivalent. F 1:25-3:15. Mr. Sokol. A study of the art of choral music. Emphasis on the principal vocal forms and on historical and national performance styles.

## Music History

**[204 The Enchanted Island, Seven Days in May, 1664 (Also Theatre Arts 204).** Spring term. Credit three hours. M W F 3:35. Messrs. Carlson, Seznec, and Zaslaw. Not offered in 1972-73.]

**213 The Art of Music: Rock, Folk, Bach.** Fall term. Credit three hours. T Th 11:15 and one discussion section to be arranged. Mr. Austin and assistants. A survey of old and new, easy and difficult music, designed to speed up the continuing development of various independent tastes. Frequent short written reports based on listening, beating time, and singing. Each topic, such as rhythm, chords, etc., is illustrated by recent popular music, folk music, jazz, church music, and concert music. Students choose individually which types to emphasize in their study, but all learn enough of the other types to build up a sense of continuities amid the contrasts among historical styles.

**[214 The Art of Music: Opera.** Spring term. Credit three hours. Mr. Randel. Not offered in 1972-73.]

**218 Chopin, Chaikovsky, Musorgsky.** Spring term. Credit three hours. No prerequisites. Lecture-recital, T Th 11:15. 218 R: credit four hours. Prerequisite: reading knowledge of Russian. Seminar for Russian readers only, M 2:30. Discussion sections to be arranged. Messrs. Austin, Gibian, and staff. Chief works of the three composers, including symphonies, concertos, and operas, are studied through phonograph records. Piano music and chamber music are presented

in live performance. The biographical, social, and intellectual contexts of the music are considered in relation to concerns of the present; students' essays may deal with such concerns more than any technical aspect of the music, though techniques are not neglected.

**[315 Brahms, Wagner, and the End of an Era.** Fall term. Credit four hours. Prerequisite: any course in music or consent of the instructor. M W F 1:25. Mr. Randel. Not offered in 1972-73.]

**[316 Music and Poetry in France: Late Middle Ages and Renaissance (Also French 356).** Spring term. Credit four hours. Prerequisite: consent of either instructor. This course will be of most interest to students who have done some work in music or in French literature. A good reading knowledge of French will be a practical necessity. M 1:25, W 1:25-3:15. Messrs. Randel and Morris and guest lecturers. Not offered in 1972-73.]

**318 Baroque Instrumental Music.** Spring term. Credit four hours. Prerequisite: any course in music or consent of the instructor. M W F 12:20. Mr. Zaslaw and staff. A survey of the major schools, genres, and styles from the emergence of purely instrumental music in the sixteenth century until the disappearance of the trio sonata and *ritornello* concerto in the mid-eighteenth century. Various instrumental works of the late Baroque (by Vivaldi, Bach, Handel, and others) will be considered in their historical contexts. The Cornell University Trio will provide live demonstrations.

**381 Monteverdi to Mozart.** Fall term. Credit four hours. Prerequisite: Music 152 or consent of the instructor. T 11:15, Th 11:15-1:05. Mr. Webster. The history of music from the emergence of Baroque style around 1600 until the emergence of mature classical style at the end of the eighteenth century. Emphasis on works of Monteverdi, Schütz, Purcell, J. S. Bach, Handel, Haydn, and Mozart.

**382 Beethoven to Debussy.** Spring term. Credit four hours. Prerequisite: Music 151 or consent of the instructor. T 11:15, Th 11:15-1:05. Mr. Webster. The history of musical styles from Beethoven's time through the beginning of the twentieth century. Emphasis on works of Beethoven, Schubert, Schumann, Chopin, Wagner, Brahms, Mahler, and Debussy.

**385 Schoenberg, Bartók, and Stravinsky.** Fall term. Credit three hours. Prerequisite: ability to play (on any instrument the student prefers) a piece from Bartók's *Mikrokosmos*, vol. 1. M W 11:15. Mr. Austin. A survey of the three composers' works, of their interactions with each other, and of their connections with some of the literary, artistic, political, and religious concerns of their time.

**[386 Shostakovich, Cage, Stockhausen.** Spring term. Credit three hours. Prerequisite: Music 385 or consent of the instructor. M W and occasionally F 11:15. Mr. Austin and guest lecturers. Not offered in 1972-73.]

**387 Mozart.** Fall term. Credit four hours. Prerequisite: any course in music or consent of the instructor. M W F 11:15. Mr. Zaslaw. The music of Mozart in its historical, sociological, stylistic, and performance-practice contexts. Students will be encouraged to perform Mozart's music.

**[481 Music in Western Europe to Josquin.** Fall term. Credit four hours. Prerequisite: Music 382 or consent of the instructor. Mr. Randel. Not offered in 1972-73.]

**[482 Josquin to Monteverdi.** Spring term. Credit four hours. Prerequisite: Music 382 or consent of the instructor. Mr. Randel. Not offered in 1972-73.]

## Independent Study

**301-302 Independent Study in Music.** Either term. Credit one to four hours a term. Limited to juniors and seniors who are majoring in music. Departmental approval required. Hours to be arranged. Staff.

## The Honors Program

**401-402 Honors in Music.** Credit four hours a term. Open only to Honors candidates in their senior year. Staff.

## Musical Performance

**321-322 Individual Instruction in Voice, Organ, Piano; String, Woodwind, and Brass Instruments.** 321 fall term only; 322 spring term only. Undergraduate credit only. Music 321 is not prerequisite to Music 322. Credit two hours a term. Consent of the instructor is required; students may not preregister.

Basic fee for one half-hour lesson weekly during one term (carrying no credit), \$60. Fees for a practice schedule of six hours weekly during one term: \$30 for the use of a pipe organ; \$15 for a practice room with piano; \$5 for a practice room without piano. For credit: one hour lesson weekly (or two half-hours) and a double practice schedule earn two hours credit per term, provided that the student has earned, or is earning, at least three hours credit in courses in music history or music theory for every four hours credit in Music 321-322. The basic fees involved are then multiplied by one and one half (lesson fee \$90; practice fee \$45, \$22.50, and \$7.50). A student may register for this course in successive years. The Department of Music offers a limited number of scholarships in applied music. For information inquire at the Department office.

**391-392 Advanced Individual Instruction.** 391 fall term only; 392 spring term only. Credit four hours a term. Open only to juniors and seniors who are majoring under Option II with concentration in performance. Music 391 is not prerequisite to Music 392.

## Musical Organizations and Ensembles

Students may participate in musical organizations and ensembles throughout the year and obtain one credit hour per term. Consent of the instructor is required, and admission is by audition only. Registration is permitted in two of these courses simultaneously, and students may register in successive years, but no student may earn more than six hours of credit in these courses. Membership in these and other musical organizations is also open to students without credit, if desired.

**331-332 Sage Chapel Choir.** T 4:30-5:30, Th 7:30-9:00 p.m., Sunday 9:30 a.m. Mr. Paterson.

**333-334 Cornell Chorus.** T 7:15-9:00 p.m., Sunday 2:15-3:45 p.m. or 7:15-9:00 p.m. Consent of the instructor is required. Mr. Sokol.

**335-336 Cornell Orchestras.** Rehearsals for the Cornell Symphony Orchestra: Full orchestra, W 7:30-10 p.m.; sectional rehearsals, alternate T or Th 7:30-10 p.m. Rehearsals for the Cornell Chamber Orchestra, M 7:30-10 p.m. (Limited to more experienced players.) Mr. Husa.

**337-338 University Bands.** During football season: Marching Band, T Th 7:15-9:15 p.m., F 4:30-5:45; Symphonic Band, T Th 4:30-5:45. After football season: Wind Ensemble, T 4:30-5:45, Th 7:15-9:15 p.m.; Symphonic Band, T 7:15-9:15 p.m., Th 4:30-5:45. Mr. Stith.

**339-340 Ear Training and Sight Singing.** 339 fall term only; 340 spring term only. Open only to students who are

participating in a University musical ensemble. Consent of the instructor is required. Music 339 is not prerequisite to Music 340. T 3:35. Mr. Sokol.

A practical course designed to improve the student's conception of melody and rhythm and his sight reading ability. Progressive class exercises in intervals, rhythms, melodies, and counterpoints.

**441-442 Chamber Music Ensembles.** Consent of the instructor is required. Hours to be arranged. Miss Monosoff and Mr. Hsu.

Study and performance of chamber music literature; string and wind groups, piano trios and quartets, trio sonatas, groups for early music including recorders and other early instruments, etc. Emphasis on musical problems, with some practice in sight reading.

**443-444 Chamber Singers.** Consent of the instructor is required. F 4:30-6. Mr. Sokol.

Study and performance of selected vocal music.

## Graduate Courses and Seminars

Primarily for graduate students. Open to qualified undergraduates with consent of the instructor. For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

**[516 Music and Poetry in France: Late Middle Ages and Renaissance (Also French 556).]** Spring term. Credit four hours. M 1:25-3:20, W 1:25-2:15. Messrs. Randel and Morris. Not offered in 1972-73.]

**[551 Twentieth-Century Classics, European and American.]** Fall term. Credit four hours. T 12:20-2:00. Mr. Palmer. Not offered in 1972-73.]

**553 Analysis of Structure and Function in Tonal Music.** Fall term. Credit four hours. Qualified upperclassmen may enroll with consent of the instructor. T Th 10:10. Th 1:25. Mr. Lubin.

A systematic analysis of structure and function in tonal music. Emphasis on the Viennese classics and Bach, with a particular study of tonal evolution to the nineteenth century.

**555-556 Seminar in Analytic Techniques for Twentieth-Century Music.** 555 fall term only; 556 spring term only. Credit and hours to be arranged. Mr. Lubin.

Preparation of twentieth-century music research projects for the M.F.A. and D.M.A. degree.

**557-558 Composition.** 557 fall term only; 556 spring term only. Credit four hours a term. Hours to be arranged. Mr. Phillips.

**581-582 Introduction to Bibliography and Research.**

581 fall term only; 582 spring term only. Credit four hours a term. Prerequisites: a reading knowledge of French and German and an elementary knowledge of music theory and general music history. M 1:25-3:20. Fall term, Mr. Zaslaw; spring term, Mr. Austin.

**583 Early Theories of Tonality.** Fall term. Credit four hours. W 2:30-4:30. Mr. Webster.

**[584 Seminar in Renaissance Music.]** Spring term. Credit four hours. T 2:30-4:15. Mr. Zaslaw. Not offered in 1972-73.]

**585 Schoenberg, Bartók, and Stravinsky.** Fall term. Credit five hours. Prerequisites: ability to play Stravinsky's *Pieces for the Five Fingers*, and a reading knowledge of one relevant foreign language—French, German, Russian, or Hungarian. M W F 11:15. Mr. Austin.

**587-588 Mozart.** 587 fall term only; 588 spring term only. Credit four hours a term. Prerequisite: a reading knowledge

of German. Th 2:30-4:15. Mr. Zaslaw.  
Research in the music of Mozart and his contemporaries.

**683-684 Seminar in Medieval Music.** 683 fall term only; 684 spring term only. Credit four hours a term. F 2:30-4:15. Mr. Randel.

**687-688 Debussy to Boulez.** 687 fall term only; 688 spring term only. Credit four hours a term. T 2:30-4:15. Mr. Austin.

**[689-690 Liturgical Chant in the West.** 689 fall term only; 690 spring term only. Credit four hours a term. Mr. Randel. Not offered in 1972-73.]

## Philosophy

Mr. N. Kretzmann, Chairman; Messrs. M. Black, R. Dancy, A. Fine, C. Ginet, B. Goldberg, J. A. W. Kamp, D. Lyons, N. Malcolm, S. Shoemaker, R. Stalnaker, N. Sturgeon, A. Wood.

Students expecting to major in philosophy should begin their study of it in their freshman or sophomore years. The normal requirement for admission to the major is a grade of C or better in every philosophy course taken in the first two years, including at least one course numbered 200 or above. Students should apply to the Department of Philosophy for admission to the major.

Eight philosophy courses are required for the major. These must include at least one course in ancient philosophy, at least one other course in the history of philosophy, and at least two courses numbered above 400 (with the exception of 490). Philosophy 210 and 212, while not required, are especially recommended for majors or prospective majors.

Philosophy majors must also complete at least eight hours of course work in related subjects approved by their major advisers.

## The Honors Program

A candidate for Honors in philosophy must be a philosophy major with a cumulative average of B- or better for all work in the College of Arts and Sciences and an average of B or better for all work in philosophy. In either term of the senior year a candidate for Honors enrolls in Philosophy 490 and undertakes research leading to the writing of an Honors essay by the end of that term.

Prospective candidates should apply to the Department of Philosophy.

## Distribution Requirement

The Distribution requirement in the Humanities is satisfied in philosophy by completing any two courses in philosophy, with the following exceptions: (a) Philosophy 100 if used in satisfying the Freshman Seminar requirement; (b) a combination of two introductory courses, 100 and 101; (c) a combination of two courses in formal logic, such as 212, 412, 413, and 419.

## Introductory Courses

**100 Freshman Seminar in Philosophy.** Either term. Credit three hours. Open only to freshmen who have not taken Philosophy 101. Independent sections. Fall term: M W 1:25-2:40, instructor to be announced; M W 2:30-3:45, Mr. Shoemaker; T Th 2:30-3:45, Mr. Wood and instructor to be announced. Spring term: M W 1:25-2:40, instructor to be announced; M W 2:30-3:45, Mr. Shoemaker and Mr. Malcolm; T Th 2:30-3:45, Mr. Stalnaker and instructor to be announced.

Central topics in various areas of philosophy are studied and discussed in sections of this course. Offered as part of the Freshman Humanities Program.

**101 Introduction to Philosophy.** Either term. Credit three hours. Open only to freshmen and sophomores who have not taken Philosophy 100. Fall term: Lecture, Th 9:05; Seminar meetings M T W or Th 3:35-5. Messrs. Ginet, Kretzmann, and Lyons, jointly. Spring term: M W F 12:20, Mr. Kamp; T Th S 9:05, Mr. Sturgeon; T Th S 11:15, Mr. Goldberg; T Th S 12:20, Mr. Goldberg.

An introduction to philosophical ideas and problems through an intensive study of the writings of several major philosophers. In the fall term, the course will be given jointly by three members of the Department; there will be one common lecture per week, and the class will be divided into seminars which meet once a week. In the spring term there will be four independent sections limited to 35 students each. Topic for the fall term: Skepticism and Relativism regarding Knowledge and Values. Topics for the spring term to be announced.

## Courses Primarily for Undergraduates

All 200- and 300-level courses in philosophy are designed primarily for undergraduates and are open to sophomores, juniors, and seniors except as noted in the course descriptions. The 200-level courses generally have no prerequisites. Some 300-level courses have prerequisites which instructors may waive in individual cases. (Graduate students in philosophy may be permitted to enroll in certain 300-level courses by special action of the Department.) Credit for each such course is four hours.

**201 Ancient Philosophy.** Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 12:20. Mr. Dancy.

A study of major themes in ancient thought, particularly that of Plato and Aristotle.

**210 Philosophical Problems.** Either term. Credit four hours. Open to sophomores, juniors, seniors, and to freshmen who have taken Philosophy 100 or 101. Recommended for prospective majors in philosophy. Registration is limited to 35 students. Fall term: T Th S 12:20, Mr. Goldberg. Spring term: M W F 2:30, Mr. Ginet.

The study of a selected philosophical problem. Contemporary as well as classical sources are used. Topic for the fall term: Fact and Value. Topic for the spring term: Free Will.

**212 Introduction to Logic.** Either term. Credit four hours. Open to freshmen, sophomores, juniors, and seniors. Fall term: M W F 10:10, Mr. Stalnaker. Spring term: M W F 11:15, Mr. Fine.

The analysis and evaluation of reasoning in terms of formalized languages (the sentential calculus and the first-order predicate calculus with identity).

**215 Semantics.** Spring term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 10:10, Mr. Kretzmann.

A survey of the philosophy of language and symbolism including discussion of the nature of communication, speech acts, and theories of meaning.

**[223 Social and Political Philosophy.** Not offered in 1972-73.]

**225 Ethics.** Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 1:25, Mr. Lyons. An introduction to problems and theories in moral philosophy.

**[301 Modern Rationalism.** Not offered in 1972-73.]

**302 Modern Empiricism.** Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 11:15. Mr. Shoemaker.

Topic for 1972-73: Hume's *Treatise of Human Nature*.

**303 Medieval Philosophy.** Spring term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 12:20. Mr. Kretzmann.  
A study of selected classic works in medieval philosophy.

**304 Topics in Ancient Philosophy.** Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 2:30. Mr. Dancy.  
An intensive study of selected topics in ancient philosophy. Topic for 1972-73: Plato's Theory of Knowledge.

**305 Special Topics in the History of Philosophy.** Either term. Credit four hours. Open to sophomores, juniors, and seniors. Fall term, T Th S 10:10, Mr. Wood. Spring term, M W F 10:10, Mr. Giné.  
Topic for the fall term: Hegel's social philosophy. Topic for the spring term: Berkeley.

**307 Kant.** Spring term. Credit four hours. Open to juniors and seniors who have taken two courses in philosophy. M W F 11:15, Mr. Shoemaker.  
Topic for 1972-73: *The Critique of Pure Reason*.

**[308 Contemporary Philosophy.** Not offered in 1972-73.]

**309 Philosophy of Marx.** Spring term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 12:20. Mr. Dancy.  
A study of the development and content of Marx's views on man, society, and history. Special attention will be paid to his writings prior to the *Communist Manifesto*, but material from later works will be considered as well.

**[310 Philosophy of History.** Not offered in 1972-73.]

**[311 Existentialism and Phenomenology.** Not offered in 1972-73.]

**314 Introduction to Philosophy of Mathematics.** Spring term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 2:30. Mr. Black.  
An examination of the meaning of basic mathematical terms and the justification of mathematical principles. Topics to be examined may include: the definition of an integer; relations between arithmetic, set-theory and logic; the limits of formalism, intuitionist criticisms of classical mathematics; the sources of mathematical truth.

**316 Metaphysics and Epistemology.** Fall term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 11:15. Mr. Sturgeon.  
Topic for 1972-73: Thoughts and their Objects.

**[321 Aesthetics.** Not offered in 1972-73.]

**322 Philosophy of Religion.** Spring term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 12:20. Mr. Wood.  
A study of selected problems relating to religious attitudes, religious faith, and the religious life.

**323 Law, Society, and Morality.** Spring term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 1:25. Mr. Lyons.  
Topic for 1972-73: The Philosophy of Law.

**325 Ethical Theory.** Spring term. Credit four hours. Open to sophomores, juniors, and seniors. T Th S 11:15. Mr. Sturgeon.  
A comparison of two or more selected theories of ethics, including both normative theories, concerning what we ought to do, and metaethical theories, concerning the meaning and justification of normative theories. Both historical and contemporary sources will be used.

**327 Introduction to the Philosophy of Science.** Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 1:25. Mr. Kamp.  
An examination of certain topics that arise in attempting to understand the historical development and the logical

setting of science: theories and observation, explanation, and the testing of hypotheses.

**333 Philosophy of Psychology.** Fall term. Credit four hours. Open to sophomores, juniors, and seniors. M W F 12:20. Mr. Stalnaker.  
A study of theories of mind and behavior in philosophy and modern psychology.

## Advanced Courses and Seminars

All 400-level courses in philosophy are designed primarily for advanced undergraduates, philosophy majors, and graduate students. All 500-level courses in philosophy are seminars designed primarily for graduate students. The 400- and 500-level courses are open to others only by consent of the instructor or as indicated in the course descriptions. Credit for each course is four hours.

**[403 Plato and Aristotle.** Not offered in 1972-73.]

**412 Deductive Logic.** Fall term. Credit four hours. Prerequisite: Philosophy 212 or the equivalent. M W F 11:15. Mr. Fine.  
The first-order predicate calculus: proof theory and model theory; the completeness theorem. Theories and definitions. Axiomatic set theory: sets, functions, relations, cardinals, ordinals, the recursion theorem.

**413 Deductive Logic.** Spring term. Credit four hours. Open to upperclassmen and graduate students. M W F 2:30. Mr. Kamp.  
Advanced topics in logic. Topics for 1972-73 to be announced.

**[414 Philosophy of Logic.** Not offered in 1972-73.]

**415 Problems in the Philosophy of Language.** Fall term. Credit four hours. Open to upperclassmen and graduate students. T Th 2:15-3:30. Mr. Goldberg.  
Topic for 1972-73: Language, Mind, and Brain.

**416 Metaphysics.** Fall term. Credit four hours. Open to upperclassmen and graduate students. M W 2:15-3:30. Mr. Giné.  
Topic for 1972-73: Identity through Time.

**417 Theory of Knowledge.** Spring term. Credit four hours. Open to upperclassmen and graduate students. M W F 9:05. Mr. Malcolm.  
Topic for 1972-73: Wittgenstein.

**[418 Inductive Logic.** Not offered in 1972-73.]

**[419 Intensional Logic.** Not offered in 1972-73.]

**425 Contemporary Ethical Theory.** Spring term. Credit four hours. Open to upperclassmen and graduate students. T Th 2:15-3:30. Mr. Lyons.  
Topic for 1972-73 to be announced.

**427 Problems in the Philosophy of Science.** Spring term. Credit four hours. Open to upperclassmen and graduate students. M W F 1:25. Mr. Fine.  
Topic for 1972-73 to be announced.

**[433 Problems in Ethics and Philosophy of Mind.** Not offered in 1972-73.]

**490 Special Studies in Philosophy.** Either term. Credit four hours. Open only to Honors students in their senior year. Staff.

**[551 Philosophy of Religion.** Not offered in 1972-73.]

**576 Ancient Philosophy.** Spring term. Credit four hours. W 3:45-5:40. Mr. Dancy.  
Topic for 1972-73: Topics in Aristotle's Metaphysics.

**580 Medieval Philosophy.** Fall term. Credit four hours. Th 3:45-5:40. Mr. Kretzmann.  
Topic for 1972-73: Aquinas: Rational Theology.



**581 Modern Philosophers.** Spring term. Credit four hours. Th 3:45–5:40. Mr. Wood.

Topic for 1972–73: Rousseau's Theory of Nature, Man, and Society.

**585 Ethics and Value Theory.** Fall term. Credit four hours. T 3:45–5:40. Mr. Sturgeon.

Topic for 1972–73 to be announced.

**588 Metaphysics.** Fall term. Credit four hours. F 3:45–5:40. Mr. Shoemaker.

Topic for 1972–73: Causality.

**589 Metaphysics.** Spring term. Credit four hours. M 3:45–5:40. Mr. Stalnaker.

Topic for 1972–73: Properties and Relations.

**[590 Philosophy of Language.** Not offered in 1972–73.]

**[591 Philosophy of Mind.** Not offered in 1972–73.]

**[594 Theory of Knowledge.** Not offered in 1972–73.]

**595 Semantics.** Fall term. Credit four hours. W 3:45–5:40. Mr. Kamp.

Topic for 1972–73 to be announced.

**[596 Logic.** Not offered in 1972–73.]

**597 Philosophy of Science.** Spring term. Credit four hours. T 3:45–5:40. Mr. Black.

Topic for 1972–73: Theories of Explanation.

**600 Informal Study.** Either term. Credit to be arranged. To be taken by graduate students only in exceptional circumstances and by arrangement made by the student with his Special Committee and the faculty member who has agreed to direct the study. Staff.

## Related Courses in Other Departments

**Asian Studies 371 Chinese Philosophical Literature.**

**Comparative Literature 323 Foundations of Western Thought.**

**Comparative Literature 481 Kierkegaard.**

**Greek 442 Greek Philosophy.**

**Greek Civilization 214 Greek Philosophy.**

**Mathematics 381 Elementary Mathematical Logic.**

**Semitics 210 History of Jewish Philosophy in the Post-Maimonidean Period.**

**Semitics 404 Seminar in Jewish and Islamic Philosophy.**

## Physics

Mr. D. F. Holcomb, Chairman; Messrs. V. Ambegaokar, N. W. Ashcroft, K. Berkelman, H. A. Bethe, R. Bowers, P. A. Carruthers, D. G. Cassel, G. V. Chester, R. M. Cotts, J. W. DeWire, D. B. Fitchen, B. Gittelman, K. Gottfried, K. Greisen, L. N. Hand, D. L. Hartill, P. L. Hartman, T. Kinoshita, J. A. Krumhansl, D. M. Lee, R. M. Littauer, E. C. Loh, H. Mahr, B. D. McDaniel, N. D. Mermin, N. B. Mistry, H. F. Newhall, J. Orear, L. G. Parratt, J. Peoples, Jr., R. O. Pohl, J. D. Reppy, R. C. Richardson, J. V. Sak, E. E. Salpeter, S-S Shei, A. J. Sievers, III, R. H. Silsbee, A. Silverman, P. C. Stein, R. M. Talman, D. H. White, J. W. Wilkins, K. G. Wilson, R. R. Wilson, W. M. Woodward, T-M Yan, and D. R. Yennie.

Entering freshmen may receive advanced placement and credit for one or two terms of Physics 101–102, 112, or 207–208 by demonstrating a high level of physics proficiency in the Advanced Placement Examination administered in the spring by the College Entrance Examination Board, or in a special Cornell examination given just

before the start of classes for the fall term. Further progress in physics may be limited by the level of attainment in calculus.

## Physics Major

Various options provide the student majoring in physics with the opportunity to concentrate heavily in physics or to take less physics and pursue an accompanying constellation of "outside" courses. For the more intensive physics concentration (providing a strong preparation of professional or graduate work), courses Physics 112, 213, and 214 (and preferably 315) and Mathematics 191, 192, 293H, and 294H (or 111, 122, 221, and 222) should be completed by the end of the sophomore year. For a less intensive physics program, Physics 112, 213, and 214 or 207, 208, and 301 (with Mathematics 111, 112, and 213) serve well as basic preparation, and the program may be started with Mathematics 111 as late as the middle of the freshman year. The less intensive program, with its minimal requirements, is a relaxed one, designed to allow ample time for the related studies.

A prospective physics major is urged to visit the Department office as soon as possible for an appointment for advice in planning a possible program. Acceptance into the major program is normally granted after the student has completed a year of physics and mathematics at a satisfactory level of proficiency. At the time of his acceptance by a physics major adviser, the student is expected to propose a tentative plan for completing all the requirements for graduation, including those of the major. The plan may change from time to time; however, in its final form it must be approved by the major adviser.

The major requirements are satisfied by completing two components—a core component and a concentration component.

### Core

The core requirements consist of (a) Physics 214 or, with permission, 208 and Mathematics 294 or 315 or their equivalent, and (b) a physics course, numbered between 302 and 500, in each of these areas: mechanics, electricity and magnetism, modern physics, and laboratory physics.

### Concentration

This component shall reflect the individual student's interests in some area related to physics and the array of courses must have internal coherence. The concentration shall include at least fifteen credit hours, unless otherwise stated, with at least eight credit hours in courses at the junior-senior level (numbered above 300). Illustrative concentrations are physics; mathematics; biology and chemistry; astrophysics; natural sciences; engineering; computer science; science, technology, and society; environmental studies; intellectual history, or history and philosophy of science; city planning and urban development; and business and economics.

The concentration in physics is recommended as preparation for professional or graduate work in physics or in any closely related discipline. Twelve credit hours from physics courses numbered above 300, in addition to those selected for the (b) part of the core requirements, are required. In satisfying the first three of the (b) core requirements, courses 315, 318, and 325 should be elected. For this concentration, completion of Physics 410 and 443, and at least one of 444 and 454, is strongly advised, as well as Mathematics 421, 422, and 423.

For the concentration in mathematics, fifteen credit hours of mathematics courses, all with numbers greater than 300, are required. A combined biology and chemistry concentration is recommended for premedical students or those who wish to do subsequent work in biophysics.

Concentration in the natural sciences is particularly appropriate for students interested in teacher preparation. Details of some typical concentrations are available in the Physics Department office.

## Foreign Language Requirement

Students who have an interest in eventual graduate work are advised to meet the foreign language requirement with work in French, German, or Russian.

## The Honors Program

A student may be granted Honors in Physics upon the recommendation of the Physics Advisers Committee of the physics faculty.

## Distribution Requirement

The Distribution requirement in physical science is satisfied by Physics 101–102, 201–202, 207–208, 112–213 or by the first term of any of these sequences followed by the second term of another. Physics 201–202 is particularly designed for students who do not expect to do further work in any branch of science.

If a student wishes to take a course for which he does not have a stated prerequisite, he must obtain the consent of the instructor.

**101–102 General Physics.** 101 fall term only, 102 spring term only. Credit four hours per term. Prerequisite: three years of high school mathematics including some trigonometry. Course 101 (or 112 or 207) is prerequisite to 102. Includes more modern physics and less mathematical analysis than 207–208 or 112–213; but more mathematical analysis than 201–202. Students who plan to major in a physical science should elect physics 207–208 or 112 and 213–214. An audio-tutorial (A-T) format of instruction will be used, allowing students to work in a learning center at hours of their own choice. Large group meetings, W F 9:05 or 11:15. Two discussion periods per week to be arranged. Mr. Sievers and staff.

Basic principles of physics, treated quantitatively but without calculus. Major topics in the first term are the particle structure of matter; kinematics; forces and fields (including electrical fields); momentum, angular momentum, and energy (including nuclear energy); wave motion; and relativity. The second term includes electrical and optical phenomena, quantum physics, and thermal physics. Laboratory emphasis on instruments, measurement, and interpretation of data. Textbook for 1972–73: *College Physics—A Text with Applications to the Life Sciences*, 1971, by Tilley and Thumm, supplemented extensively with course notes.

**112 Physics I: Mechanics and Heat.** Either term. Credit four hours. Prerequisite: coregistration in Mathematics 192 (or 112). Lectures, M F 10:10 or 12:20. Two discussion periods per week and one two-hour laboratory period every other week to be arranged. Preliminary examinations will be held at 7:30 p.m. October 3, November 7, February 20, and April 3. Primarily for students of engineering and for prospective majors in physics. Fall term, Messrs. Ashcroft, Hartill, and staff. Spring term, Mr. Silcox and staff. The mechanics of particles; kinematics, dynamics, and introduction of special relativity, conservation laws, central force fields, and periodic motion. The mechanics of many particle systems; center of mass, simple rotational mechanics of a rigid body, static equilibrium. Kinetic theory of simple gases. At the level of *Fundamentals of Physics* by Halliday and Resnick.

**201–202 The Great Ideas of Modern Physics.** 201 fall term only; 202 spring term only. Credit three hours a term.

Course 201 is prerequisite to 202. The course is intended for nonscientists; it does not serve as a prerequisite to any further science course. Although no scientific background will be assumed, some high school algebra and plane geometry will be helpful. Lectures M W F 2:30. An additional hour, to be arranged, will be devoted to discussion and on occasion will offer the opportunity to play with some entertaining instruments, such as lasers. Mr. Mermin and staff. The course will focus on aspects of physical science that the well-educated nonscientist ought to be acquainted with. The student for whom it is intended should, for example, be tired of not knowing what is the Second Law of Thermodynamics, be curious about whether time can run slowly (or backwards), and be intrigued (or annoyed or enchanted) by the suggestion that twentieth-century physics can contribute something to the problem of free will. Topics are likely to include the relativistic theory of space and time (and  $E = mc^2$ ), the notion of entropy and the "heat death of the universe," the nature of matter from table salt to quarks and anti-matter, the nature of light, quantum theory and the indeterminacy principle, and related subjects.

**207–208 Fundamentals of Physics.** 207 fall term only, 208 spring term only. Credit four hours a term. Prerequisite for 207, at least coregistration in Mathematics 112 or 106. High school physics is a normal background. Course 207 (or either 101 or 112 with special permission) is prerequisite to 208. Intended as the first college physics course for most students majoring in a physical science, mathematics, or in an analytically oriented biological science. Demonstration lectures, M W 9:05 or 11:15. Two discussion periods a week and one 3 hour laboratory period alternate weeks to be arranged. Preliminary examinations will be held at 7:30 p.m. on October 9, November 13, February 26, April 9. Mr. Newhall and staff. Topics treated during the year include Newton's Laws, conservation of momentum and energy, electricity, magnetism, optics and atomic physics. Emphasis is placed on the fundamental concepts and on the analytical techniques of problem and laboratory work. At the level of *University Physics*, 4th ed. by Sears and Zemansky.

**208H Fundamentals of Physics.** Spring term. An Honors section of 208. Prerequisites: a request for this course as expressed by the student in consultation with the 208H instructor and an invitation from the instructor. Lectures, M W 9:05 or 11:15. Two discussion periods and one laboratory period per week to be arranged. Students interested in 208H should preregister for 208. Evening preliminary examinations as listed in Physics 208. Mr. Hand.

**213 Physics II: Electricity and Magnetism.** Either term. Credit four hours. Primarily for students of engineering and for prospective majors in physics. Prerequisites: Physics 112 and Mathematics 192 or 112. Lectures T Th 9:05 or 11:15. Two discussion periods per week to be arranged. One two-hour laboratory period every week to be arranged. Preliminary examinations will be held at 7:30 p.m. on October 10 and November 14 in the fall term and on February 27 and April 10 in the spring term. Fall term, Mr. Lee. Spring term, Mr. Pohl. Electrostatics, behavior of matter in electric fields, magnetic fields, Faraday's Law, electromagnetic oscillations and waves, magnetism and relativity. At the level of *Fundamentals of Physics* by Halliday and Resnick. Experiments include electrical measurements and circuits, and physical electronics.

**214 Physics III: Optics, Waves, and Particles.** Either term. Credit three hours. Primarily for students of engineering and for prospective majors in physics. Prerequisites: Physics 213 and Mathematics 293 or 221; coregistration in Physics 216 or 310 required. Lectures, T Th 9:05 or 11:15. Two discussion periods per week to be arranged. Preliminary examinations will be held at 7:30 p.m. on October 5, November 9, and December 7 in the fall term

and on February 15, March 15 and May 3 in the spring term. Fall term, Mr. Orear; spring term, Mr. White.

Wave phenomena; electromagnetic waves; physical and geometrical optics; quantum effects, matter waves; uncertainty principles; introduction to wave mechanics, elementary applications. At the level of *Fundamentals of Optics and Modern Physics* by H. D. Young.

#### **216 Laboratory to Accompany Physics 214 or 218.**

Either term. Credit one hour. Coregistration in Physics 214 or 218 required. One two-hour period to be arranged. Experiments include optics, lasers, atomic spectroscopy, solid state, and nuclear and particle physics.

#### **217 Physics II: Electricity and Magnetism.**

Fall term. Credit four hours. An Honors section of 213. Prerequisites: the same as for 213; in addition: (a) a request for this course as expressed by the student in consultation with the 217 instructor, and for an engineering student the concurrence of the director of the Division of Basic Studies in the College of Engineering; (b) an invitation from the instructor. Enrollment limited. T Th S 11:15. One two-hour laboratory period every week to be arranged. Topics included are the same as in Physics 213 but their treatment is generally more analytical and somewhat more intensive.

**218 Physics III: Optics, Waves and Particles.** Spring term. Credit three hours. An Honors section of 214. Same conditions govern enrollment as for 217. T Th S 11:15.

#### **301 Fundamentals of Physics III: Relativity, Kinetic Theory, and Quantum Physics.**

Fall term. Credit four hours. Prerequisites: Physics 208 and Mathematics 213, or consent of the instructor. M W F 11:15, and F 3:35. Mr. Pohl. This course is intended as a continuation of Physics 207 and 208. It will cover special relativity, kinetic theory, and an introduction to quantum physics and to wave mechanics. At the level of *Foundations of Modern Physics* by Tipler, and the *Feynman Lectures on Physics*.

**303 Intermediate Mechanics.** Fall term. Credit four hours. Prerequisites: Physics 214 or 301 and Mathematics 294 or 315. M W F 10:10 and a fourth hour to be arranged. Mr. Parratt.

Analytical mechanics: kinematics and vector methods, conservation laws, central forces and celestial mechanics, theory of vibrations, rigid body motion, introduction to Lagrange's and Hamilton's equations. Relativity, if time allows. At the level of *Analytical Mechanics*, 2nd Ed., by Grant R. Fowles.

**308 Optics and Wave Motion.** Spring term. Credit four hours. Prerequisites: Mathematics 294 or 315 and coregistration in Physics 322 or 432. T Th S 11:15 and Th 1:25. Properties of waves (electromagnetic, mechanical, acoustic, etc.): phase and group velocity, dispersion, coherence, interference, diffraction, polarization, etc. Interaction of light with matter: absorption, dispersion, refraction, reflection, etc. Nonlinear optics. At the level of *Waves* by Crawford and of *Fundamentals of Physical Optics*, 3d ed., by Jenkins and White.

**310 Intermediate Experimental Physics.** Either term. Credit two or three hours per term. Prerequisites: Physics 208 or 213. Laboratory, T W 1:25–4:25. (Time commitment may be reduced for two hours credit.) May be taken concurrently with Physics 214 or 218 and in place of 216. Mr. Silsbee.

A variety of experiments at an intermediate level, with one to two weeks devoted to each experiment. The student is encouraged to develop his own approach to each experiment. Facilities of the 410-510 lab will be available for some of the later experiments.

**315 Microphysics.** Either term. Credit three hours. Primarily for students of engineering and prospective majors in physics. Prerequisite: Physics 214 or 301 and

Mathematics 294 or coregistration in Mathematics 315. T Th S 11:15. Fall term, Mr. Richardson, Spring term, Mr. Fitchen.

Introduction to statistical physics, solid state physics, nuclear physics and elementary particles, and current topics. At the level of *Modern Physics*, 2d ed., by R. L. Sproull.

**318 Analytical Mechanics.** Spring term. Credit four hours. Prerequisites: Physics 208H (or 208 with special permission) or 214 or 234, and Mathematics 421. M W F 10:10 and F 1:25. Mr. Gittelman.

Analytical mechanics of material particles, systems of particles and rigid bodies; oscillating systems; planetary motion, stability of orbits; collisions; Euler's equations, gyroscopic motion; Lagrange's equations; Hamilton's equation; relativistic mechanics. At the level of *Mechanics*, 2d ed., by Symon. (Note: Applied Physics 8133, taught in Fall term, is approximate equivalent of this course.)

**322 Principles of Electricity and Magnetism.** Spring term. Credit four hours. Prerequisites: Physics 303 (and preferably 310 or 360). M W F 11:15 and Th 12:20 or F 3:35. Mr. Lee.

Topics selected from Physics 325–326 (excluding optics), treated with less mathematical sophistication. At the level of *Electricity and Magnetism*, 1966, by Purcell (Berkeley Physics Course, vol. 2).

#### **325–326 Electricity, Magnetism, and Physical Optics.**

Fall term 325, Spring term 326. Credit four hours a term. Prerequisites: Physics 208H or 214, and coregistration in Mathematics 421. Course 325 is prerequisite to 326.

Lectures, T Th S 11:15 and Th 1:25. Preliminary examinations will be held at 7:30 p.m. on October 4, November 8, February 28 and April 4. Fall term, Mr. Woodward; Spring term, Mr. Yennie.

Electrostatics: electric charge and field, potential, multipoles, conductors, Laplace equation and formal solutions, electric field energy, dielectric materials, polarization. Magnetostatics: current, magnetic field, vector potential, magnetic moment, induction, inductance, magnetic materials, Maxwell's stress equation, Poynting vector, Maxwell's equations. Electrodynamics: applications of Maxwell's equations, wave equation, transmission lines, wave guides, radiation from a moving charge. Physical optics: reflection, refraction, dispersion, polarization, Fresnel and Fraunhofer diffraction, lasers, and masers. Special relativity. At the level of *Lectures on Physics*, vol. II, by Feynman; of *Foundations of Electromagnetic Theory* by Reitz and Milford; of *Electricity and Magnetism* by Slater and Frank; and of *Optics* by Sommerfeld.

**341 Thermodynamics and Statistical Mechanics.** Fall term. Credit four hours. Prerequisites: Physics 214 or 303, and Mathematics 294H. T Th S 9:05 and M or T 2:30. Mr. Ambegaokar.

Concepts of temperature, laws of thermodynamics, Carnot cycles, entropy, thermodynamic relations, free energies, phase equilibrium, multicomponent systems, chemical reactions, and thermodynamic stability criteria. Application of thermodynamics to physical systems. Introduction to statistical mechanics including a treatment of Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics with applications. Elementary transport theory. At the level of *Fundamentals of Statistical and Thermal Physics* by Reif, or of *Thermal Physics* by Morse.

**360 Introductory Electronics.** Either term. Credit three hours. Prerequisite: Physics 208 or 216 (formerly 214L or 236) or consent of the instructor. Lecture M 1:25–3:20. Laboratory, T Th 1:25–4:25 or W F 1:25–4:25. Fall term, Mr. Cotts; spring term, Mr. Cassel.

Introduction to the principles of semiconductor devices, of electronic components and circuits, and to the operating characteristics of power supplies, amplifiers, oscillators, switching and timing circuits, etc. At the level of *Basic*

*Electronics for Scientists*, 1967, by Brophy, and of *Elementary Electronics*, 1966, by White.

**410 Advanced Experimental Physics.** Either term. Credit four hours. Limited to seniors except by special permission. Prerequisite: Physics 216 or 310, or 360, and 303 or 318, and 322 or 325 or consent of the instructor. Laboratory, T W or Th F 1:25–4:25. Lecture, M 2:30–4:25. Mr. Hartman and staff.

Lectures and problems on selected topics in experimental concepts and techniques. About seventy different experiments are available among the subjects of mechanics, acoustics, optics, spectroscopy, electrical circuits, electron and ion physics, heat, X rays and crystal structure, solid state physics, cosmic rays, and nuclear physics. The student is expected to perform four to eight experiments, selected to meet his individual needs and interests. Stress is laid on independent work.

**431–432 Introductory Theoretical Physics I and II.**

431 fall term only, 432 spring term only. Credit four hours a term. Prerequisites: completion of the equivalent of Physics 207–208; for course 432 either 431 or its equivalent; and coregistration in Mathematics 421–422, or consent of the instructor. Primarily for graduate students in a science other than physics (e.g., in chemistry, engineering, or biology) who wish to prepare for more advance courses, (e.g., Physics 443, 561, 652 or 572 or Chemistry 593–594). Fall term, M W F S 11:15. Mr. White. Spring term, M W F S 11:15. Mr. Lee.

Fall term. Mechanics. Includes Newtonian mechanics, Lagrange's and Hamilton's equations, central forces, rigid body motion and small oscillations. At the level of *Mechanics*, second edition, by Simon. Spring term. Electricity and magnetism. Includes electrostatics, magnetostatics, boundary value problems, dielectric and magnetic media, circuit theory, Maxwell's equations and propagation of electromagnetic waves. At the level of *The Physics of Electricity and Magnetism* by Scott.

**443 Atomics and Introductory Quantum Mechanics.**

Fall term. Credit four hours. Prerequisites: Physics 318 and 325, or 432, and Mathematics 421, or consent of the instructor. Very few students should take Physics 572 before taking this course or its equivalent. T Th S 10:10 and M 9:05 or 2:30. Mr. Bowers. Difficulties with the classical interpretations of atomic properties are resolved in terms of quantum mechanics. At the level of *Introduction to Quantum Theory* by Park.

**444 Nuclear and High-Energy Particle Physics.**

Spring term. Credit four hours. Prerequisite: Physics 443 or consent of the instructor. M W F 9:05 and F 1:25. Behavior of high-energy particles and radiation; elementary particles; basic properties of nuclei; nuclear reactions; nuclear forces; cosmic rays; general symmetries and conservation laws of nature. At the level of *Nuclei and Particles* by Segre.

**454 Introductory Solid State Physics.**

Spring term. Credit four hours. Prerequisite: Physics 443, or Chemistry 593, or consent of the instructor. T Th S 10:10 and T 3:35. Mr. Mahr.

A semiquantitative introduction to modern solid state physics, including lattice structure, lattice vibrations, thermal properties, electron theory of metals and semiconductors, magnetic properties, and superconductivity. At the level of *Introduction to Solid State Physics*, 3d. ed., by Kittel.

**490 Independent Study in Physics.** Either term. Credit one to three hours a term. Ordinarily limited to seniors. Prerequisites: consent of the professorial staff member under whose direction the work is to be done must be obtained before registration. Hours to be arranged. Individual project work. Reading or laboratory work in any branch of physics.

**491 Senior Seminar.** Fall term. Credit one hour. Intended primarily for physics majors in their senior year. Prerequisite: consent of the student's major adviser (or of the instructor if the student is not majoring in physics). F 2:30–4:25. Mr. Cassel. Only grades of S or U will be given.

Practice in the organization, oral presentation, and discussion of selected topics in physics.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

**500 Informal Graduate Laboratory.**

**505–506 Design of Electronic Circuitry.**

**510 Advanced Experimental Physics.**

**520 Projects in Experimental Physics.**

**551 Formalism of Classical Mechanics.**

**561 Classical Electrodynamics.** Fall term. Credit three hours. Prerequisites: Physics 325 or 432, and coregistration in Mathematics 415 or 423, or consent of the instructor. T Th S 11:15.

**562 Thermal, Statistical, and Continuum Physics.** Spring term. Credit three hours. Prerequisite: Physics 319 and 443 or coregistration in Physics 572 or consent of the instructor. T Th S 11:15.

**572 Quantum Mechanics I.** Either term. Credit three hours. Prerequisite: Physics 443, and at least coregistration in Physics 551 and Mathematics 415 or 423, or consent of the instructor. M W F 11:15.

**574 Quantum Mechanics II.**

**612 Experimental Atomic and Solid-State Physics.**

**614 Experimental High-Energy Physics.**

**635 Solid State Physics I.**

**636 Solid State Physics II.**

**645 Nuclear Physics.**

**646 High-Energy Particle Physics.**

Only grades of S and U will be given in courses numbered 650 or above.

**651 Advanced Quantum Mechanics.**

**652 Quantum Field Theory.**

**653 Statistical Physics.**

**654 Theory of Many-Particle Systems.**

**657 Theory of Nuclei.**

**661 High-Energy Phenomena.**

**680(A,B,C,D) Special Topics.**

The particular topics will be announced just before the start of each term.

**690 Independent Study in Physics.**

## Psychology

Mr. H. Levin, Chairman; Messrs. H. A. Alker, A. L. Baldwin, A. W. Boykin, U. Bronfenbrenner, J. Catlin, R. B. Darlington, J. M. Farber, H. M. Feinstein; Ms. Eleanor J. Gibson; Messrs. J. J. Gibson, B. P. Halpern, R. E. Johnston, S. C. Jones, W. W. Lambert; Ms. Judith L. Laws; Messrs. E. H. Lenneberg, D. Levitsky, J. B. Maas, R. D. Mack, L. Meltzer, M. P. Naditch, U. Neisser; Ms. Vivian Olum; Messrs. D. T. Regan, T. A. Ryan, K. E. Weick, G. W. Wilcox; Ms. Donna Zahorik.



## The Major

Prerequisites for admission are: (a) any three courses in psychology (Human Development and Family Studies 115 may be counted toward the three course requirement; credit cannot be received for Psychology 101 after having received credit for Education 110). The student will generally begin with Psychology 101; (b) no grade below C+ in any psychology course; (c) acceptance by the admissions committee of the Department of Psychology.

Application forms may be obtained at the departmental office and should be filed two weeks before the pre-registration period.

Requirements for the major are: (a) a total of forty hours in psychology (including prerequisites) in which students majoring in psychology are expected to choose, in consultation with their advisers, a range of courses which cover the basic processes in psychology, and to have laboratory experience. (b) completion, by the beginning of the senior year, of an approved course in statistics, or the passing of an achievement examination administered by the department.

With the permission of the major adviser, courses in other departments may be accepted toward the major requirements.

## Concentration in Social Psychology

In cooperation with the Department of Sociology, a concentration in social psychology is available. Psychology majors who wish to specialize in social psychology are expected to meet the general requirements set by the Department, including statistics and laboratory. To ensure a solid interdisciplinary grounding, students in the concentration will be permitted to include in the major courses in sociology and related fields. Advisers will assist the student in the selection of a coherent set of courses in social organization, cultural anthropology, experimental psychology, social methodology, and several aspects of social psychology. Seniors in the concentration may elect graduate seminars.

## The Honors Program

The Honors Program is intended to give the student an opportunity to examine selected problems in depth, and subsequently to carry out independent investigation under the direction of a faculty member. During the spring term of their junior year, Honors students will take either Psychology 494, a special seminar focusing on classic problems in psychology, or (with their adviser's consent) some other appropriate course at the 400 level or above. In the fall term of their senior year, they will enroll in Psychology 495, choosing between a special seminar dealing with problems in perception, learning, and physiological psychology, and one dealing with problems in personality and social psychology. These seminars are intended to help the student focus on a thesis problem, and will consist primarily of individualized instruction. Thesis research will normally begin during this semester, and will continue in the spring, by enrollment in Psychology 498. Final Honors standing is based upon a written thesis (due on the first Monday in May) and an oral defense of the thesis, as well as upon general academic performance. Prospective candidates are encouraged to file applications as early as possible but not later than the Friday before Thanksgiving. These applications should be turned in to one of the department secretaries. For consideration by the Honors Committee applicants must have, at a minimum, a cumulative grade average of B in all courses taken in psychology.

## Distribution Requirement

The Distribution requirement in social science is satisfied by any two courses in psychology. (Human Development and Family Studies 115 and Rural Education 110 may be counted.)

**101 Introduction to Psychology: The Frontiers of Psychological Inquiry.** Fall term. Credit three hours. (Students may not receive credit for Psychology 101 after having received credit for Education 110). Open to freshmen. Those planning to major in psychology should begin with this course. Three lectures and one demonstration-discussion seminar per week. Lectures, M W F 10:10; seminars to be assigned. Mr. Maas. Emphasizes the study of human behavior from the standpoint of the basic processes. Topics include brain functioning, dreaming, intelligence, psychological testing, perception, learning, motivation, emotion, abnormal behavior, and psychiatry. The course centers upon contemporary problems confronting psychologists and is supported by films, guest speakers, and discussion seminars.

**Introduction to Psychology: Development of Human Behavior (Human Development and Family Studies 115).** Fall term. Credit three hours. Open to freshmen. Graduate students are advised to take this course as Human Development and Family Studies 615. Psychology 101 not a prerequisite. Three lectures and an optional section meeting. Lectures, M W F 11:15; section to be arranged. Mr. Bronfenbrenner.

The course provides a systematic analysis of the forces affecting human development from infancy to adulthood. Attention is focused on the interplay of biological factors, interpersonal relationships, social structure, and cultural values in changing behavior and shaping the individual. Special emphasis is given to the social implications of existing knowledge.

**102 Introduction to Psychology: Personality and Social Behavior.** Spring term. Credit three hours. Open to freshmen. M W F 11:15. Mr. Jones.

An examination of personality and social influences on the individual's adjustment to himself and his environment. Both classic and contemporary viewpoints will be considered and evaluated in the light of empirical evidence.

**201 Introduction to Psychology as a Laboratory Science.**

Either term. Credit three hours. Prerequisite: Psychology 101. Fall term lecture, M W 9:05; laboratory, T or Th 9:05-11 or T 2:30-4:30 or W 3:35-5:30 or Th 12:20-2:30. Spring term lecture, M W 12:20; laboratory T or W or Th 9:05-11 or Th 2:30-4:30 or F 1:25-3:20. Fall term, Ms. Zahorik; spring term, Mr. Farber.

Introduction to experimental methods in psychology. Two lectures and one two-hour lab period per week. Lectures and laboratory exercises will emphasize basic concepts of measurement, research design, and the relation between theory and experiment. Experiments will be drawn from several areas of psychology, and will be designed to provide experience with some of the most useful psychological research procedures.

**[206 Psychology in Business and Industry.** Spring term. Credit three hours. Prerequisite: Psychology 101 or Human Development and Family Studies 115, or consent of the instructor. Not offered in 1972-73.]

**207 Contemporary Motivation Theory.** Fall term. Credit three hours. Prerequisite: Psychology 101; Psychology 201 recommended but not required. T Th 10:10-12:05. Mr. Boykin.

A systematic and integrative examination of the current theory and research in human motivation from an experimental point of view. Historical-traditional approaches will be considered only as points of departure. Among the topics covered will be achievement motivation, complexity

theory, hedonism, arousal theory, and theories of decision making.

**210 Attention and Memory.** Spring term. Credit three hours. Prerequisite: Psychology 101 or consent of the instructor. M W F 9:05. Mr. Neisser. A study of the relations between the constructive processes of attention and memory, emphasizing recent studies of attentive and preattentive processes in vision, of selective listening, of short-term memory and recoding, and of long-term memory and imagery.

**212 Modern Psychology in Historical Perspective.** Fall term. Credit four hours. Prerequisite: one course in psychology or consent of the instructor. Lectures, M W F 1:25. Mr. Catlin. An examination of the broad problems of psychology, e.g., mind and body, the basis of knowledge, the basis of action, as they have been envisaged at various periods of history and by various schools of psychological thinking. Designed for the general student.

**215 Linguistics and Psychology.** Fall term. Credit three hours. Open to freshmen. Prerequisite: consent of the instructor. M W F 11:15. Messrs. Kelley and Levin. An introductory course covering the recent development of a new field of study based on psychology and linguistics. Topics covered will be the nature of language and its acquisition, the influence of the sounds and grammar of language on perception and memory, bilingualism, and dialects.

**[216 Decision and Choice.** Fall term. Credit three hours. Prerequisite: a course in psychology or consent of the instructor. M W F 2:30. Mr. Wilcox. Not offered in 1972-73.]

#### **Intergroup Relations: Social Conflict and Cooperation (Sociology 264).**

**280 Social Influence Processes: Attitude and Behavior Change (Also Sociology 280).** Fall term. Credit three hours. No prerequisites. T Th 1:25-3:20. Mr. Regan. This course is intended to provide an extensive review of the literature on social influence processes. Beginning with the effects of the mere presence of others on behavior, we will discuss theory and empirical research related to conformity, compliance, imitation and modeling, group decision making, and attitude change. The relationship between attitudes and behavior will be examined in detail, and application will be made to naturally occurring social influence situations.

**[281 Interpersonal Relations and Small Groups (Also Sociology 281).** Spring term. Credit three hours. Prerequisite: a course in sociology or psychology. Not offered 1972-73.]

**282 Social Psychology of Women (Also Sociology 282).** Fall term. Credit three hours. Prerequisites: Psychology 101 or 102 or Sociology 101. M W F 2:30. Ms. Laws. Theories on women's personality, roles, and capacities are compared with current research evidence. Special attention is given to the structure of thinking regarding women in the social sciences. Topics include women in the labor force, marriage and the family, socialization of girl children, female sexuality, women's aspiration and achievement, and the Women's Liberation Movement.

**284 Social-Psychological Theories and Applications (Also Sociology 284).** Spring term. Credit three hours. T Th 10:10. Mr. Meltzer. Students will read extensively in modern and classic attempts to explicate social and personal problems. The approaches of several theories—psychoanalytic, cognitive, behavioral, and role—will be considered in relation to topics such as personal rigidity, stigmata, conformity, prejudice, hysterical contagion, deviance, mental illness, conflict, intergroup relations, and social engineering.

Lectures will evaluate these perspectives in terms of recent research. Not appropriate for students who have taken Psychology 102.

**285 Personality and Social Systems (Also Sociology 285).** Fall term. Credit four hours. No prerequisites. M W F 10:10. Mr. Naditch.

A number of theories and conceptual approaches that have been used to understand the relationship between personality and social systems will be critically examined, including the cultural-configurational, psychoanalytic-cultural, behavioristic psychoanalytic, and social structural-functional approaches. A conceptual model of the interaction of personality and social systems will be developed. Emphasis will be on the relationship of individual and situational variables, and the role of cultural values in personality development.

**305 Visual Perception.** Fall term. Credit four hours. Prerequisites: two courses in psychology including Psychology 101. Lectures, M W F 9:05. Laboratory, W or Th 2:30-4:25. Mr. Farber.

The basic phenomena of visual perception, explained in terms of the stimulus variables on which they depend and the mechanisms involved. Topics include perceptual constancy, illusions, space perception, motion, elementary visual mechanisms, pattern recognition, and some problems of perceptual learning and development.

**306 Learning.** Spring term. Credit four hours. Prerequisite: Psychology 101, or 201, or 301, or consent of the instructor. Lectures, T Th 10:10. Laboratory, M or T or W 1:25-4:25. Ms. Zahorik.

The fundamental conditions and principles of learning, both animal and human. The basic phenomena of classical and operant conditioning, discrimination learning, motor learning, and verbal learning will be studied experimentally. Traditional and contemporary theories of learning will be reviewed, and selected experimental literature will be discussed with special emphasis upon recent developments in the field.

**307 Motivation.** Fall term. Credit four hours. Prerequisites: Psychology 101 and 201, or 306, or consent of the instructor. Lectures, T Th 11:15; Laboratory, Th 2:30. Mr. Ryan.

Factors controlling the initiation, direction, and intensity of human activity. Explanatory concepts derived from clinical, social, and experimental psychology. Evaluation of general theories of motivation such as psychoanalysis, field theory, and drive theories. Review of research on specific motives such as "need for achievement" considering both conceptual and methodological problems.

**[309 Development of Perception and Attention.** Spring term. Credit four hours. Prerequisites: Psychology 201, 305, 306, or consent of the instructor. M W F 10:10. Not offered 1972-73.]

**310 Human Learning and Memory.** Fall term. Credit three hours. T Th 10:10 and an additional hour to be arranged.

Basic process of human learning and memory, particularly for simple verbal material. Emphasis on the storage and retrieval of information as the fundamental unit of learning.

**313 Cognitive Processes.** Fall term. Credit three hours. Prerequisite: six hours of psychology or consent of the instructor. T Th 1:25-3:20. Mr. Baldwin. The course concentrates on higher thought processes. It covers problem solving, concept formation, thinking, theories of thinking, mathematical models, and computer simulation of thought processes. Students are expected to carry out a small empirical research project on some problem in this area.

**316 Auditory Perception.** Spring term. Credit four hours. Prerequisites: two courses in psychology, including

Psychology 201 or 305, or consent of the instructor. M W F 9:05. Mr. Wilcox.

The basic phenomena of auditory perception will be studied with an emphasis on music and speech. Topics in the foundations of auditory perception including loudness, pitch, masking, binaural localization, and elementary neurophysiology of the auditory pathway will be followed by an examination of the perceptual bases of harmony, melody, and rhythm. Topics in speech include the rudiments of acoustic phonetics, natural and synthetic mechanisms of speech production, theories of speech perception, and auditory coding of sound.

**323 Physiological Psychology (Also Biological Sciences 323).** Fall term. Credit three hours. Prerequisites: Psychology 201 or a 300-level laboratory course in Psychology, Biological Sciences 101-102 or its equivalent, and Chemistry 103-104 or its equivalent. T Th 9:05. Mr. Halpern.

A selective examination of neural, endocrine, and biochemical functions related to emotion, memory, learning, and sleep.

**323A Physiological Psychology Laboratory (Also Biological Sciences 323A).** Fall term. Credit three hours. May be taken on an S-U basis with consent of the instructor. Prerequisites: concurrent registration in Psychology 323. Also Psychology 201 and Biological Sciences 320 and consent of the instructor. Discussion section, M 7:30-9 p.m. Laboratory, T 1:25-4:25. Mr. Halpern. Experiments will be done on physiological aspects of conditioning and memory in vertebrates and invertebrates, interactions between hormones and behavior, and effects of brain lesions on perceptual behavior. A final original experiment will be planned and carried out.

**325 Introductory Psychopathology.** Fall term. Credit four hours. Prerequisite: three hours in psychology. M W 1:25-3:20. Mr. Mack.

An introduction to the study of the various forms of psychopathology especially as they relate to the experiences of human growth and development. The course is designed (1) to present a description of the major syndromes, investigations and theories of etiology, and approaches to treatment, and (2) to provide the student with an opportunity to explore his own life experiences and the life experiences of others as they play a role in psychological health, growth, disturbance, and self-defeat.

**326 Comparative Psychology.** Fall term. Credit four hours. Prerequisite: Psychology 201 or Biological Sciences 320, or consent of the instructor. T Th 10:10; laboratory to be arranged. Mr. Johnston.

The course will cover the evolution and development of behavior in different animal species. Subject matter will include communication and social behavior, comparative learning abilities, and the interaction of inheritance and experience in development. Man's place in nature will be a theme throughout.

**328 Behavioral Maturation (Also Biological Sciences 328).** Fall term. Credit three hours. Prerequisites: familiarity with psychological theories of learning and development and one year of college biology. M W 12:20. Mr. Lenneberg. Emergence of behavior will be studied in the light of developmental biology, neuroembryology and morphogenesis, physical maturation of the brain, transformation and allometry.

**350 Statistics and Research Design.** Fall term. Credit four hours. Prerequisite: a course in the behavioral sciences. M W F 10:10. Mr. Darlington. Devoted about equally to elementary applied statistics—both estimation and hypothesis testing—through two-way analysis of variance, and to general problems in the design and analysis of research projects.

**361 Drugs and Behavior.** Fall term. Credit three hours. Prerequisites: Biological Sciences 101-102 and at least two courses in Psychology; senior standing. M W F 11:15. Mr. Levitsky.

The techniques and problems in experimental psychopharmacology as they relate to psychoactive drugs as well as the behavioral, biochemical, and physiological effects of these drugs. Social and legal issues relating to the use of drugs in human societies will also be treated.

**381 Social Psychology (Also Sociology 381).** Fall term. Credit four hours. Prerequisites: three hours of psychology and three hours of sociology. M W F 11:15. Ms. Laws. Analysis of the history, concepts, methods, and theories used to describe and conceptualize the ways in which people react to one another in social settings and in the laboratory. Students will work individually or as teams on projects, using experimental or other empirical methods. The topics for investigation in lectures and reading will include socialization, attitude change, communication, interpersonal influence, impression formation, leadership, and propaganda.

**385 Theories of Personality (Also Sociology 385).** Fall term. Credit four hours. Prerequisite: Psychology 101 or 102, or consent of the instructor. M W F 12:20. Mr. Lambert.

A critical survey of the concept of personality in literature, the social sciences, and psychology. A number of the modern specialists will be discussed at some length, and recent empirical and experimental work that has grown out of their thought will be analyzed. The empirical relation of personality notions to some philosophical beliefs and literary productions will be considered. The emphasis will be mainly upon "normal" personality.

**387 Psychological Aspects of Political Behavior (Also Sociology 387).** Fall term. Credit four hours. Prerequisites: junior standing and a course in social psychology or personality, or consent of the instructor. M W F 2:30. Mr. Alker.

A survey covering student activism, dogmatism, political paranoia, determinants of "left" and "right" ideology, Machiavellianism, autocratic vs. democratic leadership, need for power, group polarization and consensus, political socialization, and psychocultural theories of war. An empirical, hypothesis testing approach will be adopted.

**401 Psychological Testing I.** Fall term. Credit four hours. Prerequisites: six hours in psychology and a course in elementary statistics. T Th 11:15 and additional hours to be arranged. Mr. Darlington.

Emphasis is on logical and mathematical problems in the interpretation, evaluation, and construction of tests. No training in administering tests.

**402 Psychological Testing II.** Spring term. Credit four hours. Prerequisite: Psychology 401 or consent of the instructor. Offered in alternate years. Mr. Darlington. A continuation of the topics considered in Psychology 401.

**410 Individual Differences.** Spring term. Credit four hours. Prerequisites: seven hours of psychology and junior or senior standing, or consent of the instructor. M W F 2:30. Mr. Alker.

A survey of the research literature in differential psychology on personality, intelligence, creativity, psychopathology, sex, and race. Conflicts between experimental, i.e., manipulative and correlational research approaches will be considered in terms of both their "relevance" and scientific quality. General problems in personality assessment will also be considered.

**[415 Topics in Human Memory.]** Fall term. Credit four hours. Not offered in 1972-73.]

**416 Psychology of Language.** Spring term. Credit

four hours. Prerequisite: Psychology 215 or consent of the instructor. M W F 12:20. Mr. Catlin.

An advanced treatment of the nature of the human capacity for language. Topics will include the nature of linguistic theory, semantics and reference, language universals, language acquisition, the relationship of language to other cognitive processes, speech perception and production, the embodiment of language in the brain, and comparative primate vocalization and communication.

**424 Brain and Behavior (Also Biological Sciences 424).** Fall term. Credit three hours. Prerequisite: familiarity with theories of perception, memory, and physiological psychology, or consent of the instructor. Th 2:30-4:25. Mr. Lenneberg.

A theoretical introduction to human neurology for students of behavior. This survey of clinical symptoms and their etiology is designed to enable students to make use of disease for research purposes.

**426 Seminar & Practicum in Psychopathology.** Spring term. Credit four hours. Open to majors in psychology who have taken Psychology 325, Junior or Senior status, and consent of the instructor. Hours to be arranged. Mr. Mack.

This course is designed as a field work and seminar course for advanced students who have mastered the fundamental concepts of personality theory and psychopathology. The course will provide an opportunity for the student to explore in depth the various forms of psychopathology, their etiology and treatment, to discuss and evaluate these in seminar, and under close supervision, to work with mental health professionals and those who seek their help in several mental health settings.

**[427 Sensory Function (Also Biological Sciences 427).** Fall term. Credit three hours. Offered in alternate years. Prerequisites: Biological Sciences 320 or the equivalent and consent of the instructors. Not offered in 1972-73].

**[427A Sensory Function Laboratory (Also Biological Sciences 427A).** Fall term. Credit two hours. Offered in alternate years. Prerequisites: Psychology 427 and consent of the instructors. Enrollment limited to 15 students. Not offered in 1972-73.]

**[429 Psychophysics and Scaling.** Fall term. Credit four hours. Prerequisite: calculus, statistics, junior or senior standing, or consent of the instructor. Not offered in 1972-73.]

**440 Sleep and Dreaming.** Spring term. Credit four hours. Prerequisites: advanced undergraduate or graduate standing and consent of the instructor. Enrollment limited to 15 students. T 10:10-12:05 and laboratory to be arranged. Mr. Maas.

Investigation of animal and human biological, physiological, and psychological research on sleep and dreaming. Explores the relationship between physiological evidence, empirical laboratory research, and clinical findings in the process and content of the dream state. Demonstration of research techniques used in the animal and human sleep laboratory. Seminars will focus on reviews of the literature and research design and proposals.

**442 Physiological Mechanisms of Animal Social Behavior.** Spring term. Credit four hours. Prerequisites: Psychology 323 or 328, or Biological Sciences 320, or consent of the instructor. M Th 2:30-4:25. Mr. Johnston. The causation of behavior will be the main theme of this course. Social behaviors (primarily) will be investigated at various levels of analysis (such as hormonal, neurophysiological, and behavioral). General integrative schemes ("ethological" and "psychological") will be discussed.

**444 Theories of Human Behavior.** Spring term. Credit three hours. Prerequisites: Senior or graduate status. T Th 2:30-4:25. Mr. Baldwin.

A course devoted to the comparative study of several major theories of human behavior, including Heider's naive psychology, Lewin, Freud, Piaget, and several varieties of S-R theory. Students will read original material in each of the theories, and also sample the empirical studies that have stemmed from each of the theories.

**[462 Discrimination Learning.** Fall term. Credit four hours. Prerequisite: Psychology 306 or the equivalent. Not offered in 1972-73.]

**[464 Motivation and Human Learning.** Fall term. Credit four hours. Offered in alternate years. Prerequisites: Psychology 306 or 307 or 310 or consent of the instructor. Not offered 1972-73.]

**465 Mathematical Behavior Theory.** Fall term. Credit four hours. Prerequisite: one year of calculus. M W F 10:10. Mr. Wilcox.

The purpose of this course is to give a brief overview of current developments in mathematical psychology and to develop techniques for the application of mathematics to psychological theory. Topics covered include choice behavior, decision theory, psychophysics, information processing models of behavior, and multidimensional scaling.

**[466 Theories of Vision.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Not offered in 1972-73.]

**467 Seminar: The Examined Self—A Psychohistorical View.** Spring term. Credit four hours. Prerequisite: Consent of the instructor. Hours to be arranged. Mr. Feinstein. The major focus of this seminar will be a study of American biographical literature which provides material for analysis of changing views of selfhood in historical context. The view of self that emerges in self scrutinizing and confessional literature is a reflection of prevailing ideologies. The texts will be studied as illustrating both the ideology of the period and as samples of persistent problems of self development.

A second focus for the seminar will be personal involvement with the text. Rather than striving for abstract objective criticism, we will encourage and explore the ways in which our study of other selves aids and is aided by our own self-knowledge. And we will be alert to the ways in which a study of the ideologies of other epochs makes us more aware of our own.

**469 Seminar: Psychotherapy: Its Nature and Influence.** Spring term. Credit four hours. Prerequisites: Nine hours of Psychology including Psychology 325 or equivalent and consent of the instructor. Hours to be arranged. Ms. Olum. A small discussion seminar focusing primarily on the nature of psychotherapy. It will also consider the influence of psychotherapeutic thought on our culture as well as the relationship between differing views of the nature of men and various psychotherapies: psychoanalytic, ego-psychological, existential, and behavioral. Extensive readings and reports to the seminar will be expected from participants.

**471-472 Statistical Methods in Psychology.** 471 fall term; 472 spring term. Credit four hours a term. Prerequisite: Psychology 101 or Human Development and Family Studies 115, Psychology 201 or consent of the instructor. Psychology 471 is prerequisite to 472. M W F 1:25. Mr. Ryan. An analysis of the methods for treating various kinds of psychological data. Fall term: tests of significance and confidence limits, analysis of variance and correlation. Spring term: complex designs in analysis of variance, analysis of trends and covariance, multiple and curvilinear correlation, introduction to factor analysis.

**[475 Analysis of Nonexperimental Data.** Fall term. Credit four hours. Offered in alternate years. Prerequisites: Psychology 471 or equivalent. Not offered in 1972-73.]



**[476 Instrumentation in Psychology.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Not offered in 1972-73.]

**480 Attitude Theory (Also Sociology 480).** Fall term. Credit four hours. Prerequisite: a course in social psychology. M W F 10:10. Mr. Meltzer. A survey of theory and research on attitudes and attitude change. The cognitive consistency approaches (balance, dissonance, congruity) will be emphasized.

**481 Advanced Social Psychology (Also Sociology 481).** Spring term. Credit four hours. Prerequisite: a course in social psychology or consent of the instructor. M W F 11:15. Mr. Regan.

Emphasis is on the empirical study of social psychological phenomena. Students will be introduced to empirical laboratory and field methods used in social psychology. Substantive problems will provide the focus for the demonstration and use of these techniques.

**[482 Social Psychological Aspects of Social Change (Also Sociology 482).** Spring term. Credit four hours. Prerequisites: any two courses in psychology or sociology or consent of the instructor. Not offered in 1972-73.]

**483 Social Interaction (Also Sociology 483).** Spring term. Credit four hours. Prerequisites: consent of the instructor and three hours in psychology and three hours in sociology. Hours to be arranged. Mr. Hayes. A field and laboratory course dealing with the major dimensions of interpersonal perception and behavior. The relation of these dimensions to self-conception, social roles, group structure, and dynamics are examined. Contemporary research is stressed in the readings. Student projects are an integral part of the course.

**486 Socialization Processes and Social Context (Also Sociology 486).** Spring term. Credit four hours. Prerequisite: Senior class or graduate student standing and consent of the instructor. T 1:25-3:20. Mr. Bronfenbrenner. The seminar examines critically existing theory and research on the influence of group structure and social roles on socialization processes in the family, peer group, neighborhood, and community. Particular attention is focused on the differential effect, if any, of different socializing agents, such as mother, father, older children, age mates, teachers, and other adults. Students are expected to work independently in preparing critical reviews of relevant research literature and developing designs for needed research.

**489 Seminar: Selected Topics in Social Psychology (Also Sociology 489).** Fall term. Credit four hours. Prerequisites: consent of the instructor and three hours of psychology and three hours of social psychology or sociology. T 2:30-4:30. Mr. Jones. A small discussion seminar dealing with issues in both social and personality psychology. Initial discussions will focus on specific areas of the field such as interpersonal evaluation, attitude change, and group processes. Subsequently, the discussions will become more general and raise such questions as: What are the major themes social psychologists are or should be studying? What are the appropriate units of analysis of social behavior?

**494 Junior Honors Seminar.** Spring term. Credit four hours. Prerequisite: admission to the departmental Honors program. Hours to be arranged. Staff. One or more fundamental issues in psychology will be examined in depth and from many points of view.

**495 Senior Honors Seminar.** Fall term. Credit four hours. Prerequisite: admission to the departmental Honors program. Hours to be arranged. Staff. Intended to introduce the Honors student to specific areas of psychological research so that he can choose and begin

working on a dissertation topic. The seminar will usually be divided into two sections, dealing with different areas of interest.

**496 Supervised Study.** Either term. Credit two hours. Staff.

**497 Supervised Study.** Either term. Credit four hours. Staff.

**498 Senior Honors Dissertation.** Spring term. Credit four hours. Prerequisite: admission to the departmental Honors program and (usually) Psychology 495. Hours to be arranged.

## Neurobiology and Behavior

Recommended courses in neurobiology and behavior in other departments are Biological Sciences 106, 320, 324, 326, 522, and 526 and Electrical Engineering 4588 and 4589.

## Graduate Courses and Seminars

Primarily for graduate students, but with the consent of the instructor, graduate courses may be taken by qualified undergraduates. Approximately five graduate courses or seminars will be offered each term, the selection to be determined by the needs of the students. During the preregistration period, the list of courses and seminars for the following term will be posted, specifying instructors, topics to be covered, and hours of meeting.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions*. If a course is not included there, consult the graduate Field representative.

**501-502 General Seminar for Beginning Graduate Students.** Either term. Credit three hours.

**511-512 Perception.** Either term. Credit four hours.

**513-514 Learning.** Either term. Credit four hours.

**515-516 Motivation.** Either term. Credit four hours.

**517-518 Language and Thinking.** Either term. Credit four hours.

**519-520 Cognition.** Either term. Credit four hours.

**521-522 Psychobiology.** Either term. Credit four hours.

**523-524 Physiological Psychology.** Either term. Credit four hours.

**525-526 Mathematical Psychology.** Either term. Credit four hours.

**531-532 History of Psychology.** Either term. Credit four hours.

**535-536 Animal Behavior.** Either term. Credit four hours.

**541-542 Statistical Methods.** Either term. Credit four hours.

**543-544 Psychological Tests.** Either term. Credit four hours.

**545-546 Methods in Social Psychology.** Either term. Credit four hours.

**547-548 Methods of Child Study.** Either term. Credit four hours.

**561-562 Human Development and Behavior.** Either term. Credit four hours.

**575-576 Personality.** Either term. Credit four hours.

**577-578 Industrial Psychology.** Either term. Credit four hours.

**580-581 Experimental Social Psychology (Also Sociology 580-581).** Either term. Credit four hours. Mr. Regan.

**583 Proseminar in Social Psychology and Personality (Also Sociology 583).** Fall term. Credit four hours. Prerequisites: graduate major in social psychology or minor in social psychology with consent of the instructor. M Th 4-5:45. Mr. Lambert and staff.

**585 Social Structure and Personality (Also Sociology 585).** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. W 3:35-5:30. Mr. Rosen.

**586-587 Interpersonal Interaction (Also Sociology 586-587).** Either term. Credit four hours. Prerequisite: consent of the instructor. Time to be arranged. Mr. Baldwin.

**591-592 Educational Psychology.** Either term. Credit four hours.

**595-596 The Teaching of Psychology.** Either term. Credit four hours.

**682 Social Psychology (Also Sociology 682).** Spring term. Credit four hours. Prerequisites: Graduate standing or consent of the instructor. Hours to be arranged. Mr. Meltzer.

**684 Seminar in Feminine Identity (Also Sociology 684).** Spring term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. Hours to be arranged. Ms. Laws.

## Romance Studies

The Department of Romance Studies offers courses in French language and literature, Italian language and literature, and Spanish language and literature. For complete course listing and for details of the major programs in French, Italian, and Spanish, see those language headings in the section Modern Foreign Languages and Literatures.

## Russian Literature

For complete course listings and for details of the major, see the heading "Russian" in the section Modern Foreign Languages and Literatures.

## Semitic Languages and Literatures

Mr. B. Netanyahu, Chairman; Messrs. C. Carmichael, A. Ivry, I. Rabinowitz.

The Department of Semitic Languages and Literatures offers Cornell undergraduates access to the thought and self-expression of the cultures which produced Judaism, Christianity, and Islam, and which today help to define and characterize the many millions of people who live in countries that comprise the region we call the Middle East. Hebrew, Aramaic, and Arabic are not only the languages of the Old Testament and of the Koran, but of literatures of intrinsic merit and interest whose influence has permeated and enriched the literatures of many other civilizations, both Eastern and Western, ancient and modern, including our own. Studies pursued in this Department will, therefore, be found of lasting benefit and utility to all whose career interests involve the Middle East or Africa, and to all whose interest in religion and the humanities is more than merely casual.

Students who elect, as their major study, one of the fields of Semitic Languages and Literatures should consult the Department with regard to their special requirements.

## Hebrew

**101-102 Elementary Hebrew Language.** Throughout the year. Five credit hours a term. Oral and literary approaches combined. Section 1, M-F 10:10; Section 2, M-F 11:15; Section 3, M-F 1:25. Staff.

**201-202 Intermediate Hebrew Language.** Throughout the year. Five credit hours a term. Prerequisite: consent of instructor. M-F 10:10. Staff.

**301-302 Advanced Hebrew Language.** Throughout the year. Four credit hours a term. M W F 11:15. Staff. Readings of texts from the biblical, post-biblical, and modern Hebrew literature.

**407 Independent Study.** Either term. Credit two hours. For qualified students. Staff.

**408 Independent Study.** Either term. Credit four hours. For qualified students. Staff.

## Arabic

**103-104 Elementary Arabic.** Throughout the year. Credit three hours a term. First term prerequisite to the second. T 1:25-3:20, Th 1:25-2:15. Staff.

**203-204 Intermediate Arabic.** Throughout the year. Credit three hours a term. Prerequisite: Arabic 104 or consent of instructor. M 1:25-3:20, W 1:25-2:15. Staff.

**303 Advanced Arabic.** Fall term. Credit three hours a term. Hours to be arranged. Staff. Readings of classical Arabic texts, including parts of the Koran.

**304 Advanced Arabic.** Spring term. Credit three hours a term. Hours to be arranged. Staff. Reading of postclassical and modern Arabic texts.

## Aramaic

**451 Aramaic.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

The Western Aramaic of the Bible, the Qumran Scrolls, and the Targums; reading of selected texts.

**452 Talmudic Aramaic.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

The Western Aramaic dialect of the Palestinian Talmud and Midrash, and to the Eastern Aramaic of the Babylonian Talmud; reading of selected texts in each dialect.

## General Judaic Studies

**220 What is Judaism?** Fall term. Three credit hours. T 1:25-3:05, Th 1:25-2:15. Mr. Netanyahu.

A general introduction to the teachings of Judaism as they evolved through the ages, with special attention to the rise and development of major ethical and social concepts. The course is also designed to acquaint students with the range and structure of Jewish studies.

**221-222 A Synoptic Course of the History of the Jewish People (614-1967).** 221 fall term only; 222 spring term only. Credit four hours a term. No prerequisites. T 1:25-3:05, Th 1:25-2:15. Mr. Netanyahu.

A general survey of the major political, social, and intellectual developments in Jewish history from the close of the ancient era to the present time.

221: From the last Jewish struggle against Roman rule in Palestine (614 C.E.) to the expulsion of the Jews from Spain (1492). Centering upon the history of the Jews in Western and Central Europe, the discussion in this course will deal, among other things, with the status of the Jews in Medieval society; their relationship with the Crown, Church, nobility, and city; their contribution to the development of urban life, capitalism, and centralized government; the persecution of the Jews in the Middle Ages and the establishment of the Spanish Inquisition.

222: From the beginning of the modern era (1492) to the Six Day War (1967). The struggle for Jewish emancipation; the spread of the Religious Reform movement; the rise and development of anti-Semitism; the growth of modern Jewish Nationalism; the holocaust and the establishment of the state of Israel will be among the topics dealt with in this course.

**320 From Spinoza to Buber.** Spring term. Credit four hours. T 3:35–4:25, Th 2:30–4:10. Mr. Netanyahu. The reassessment of the Judaic heritage by the foremost Jewish thinkers in modern times, and their contribution to the emergence of modern Judaism, will be surveyed and analyzed. A number of representative works will be studied in English translation.

**[321 Nationalism and Religion in Modern Jewish History, 1789–1948.]** Spring term. Credit three hours. T 3:35–4:25, Th 2:30–4:15. Mr. Netanyahu. Not offered in 1972–73.]

## Jewish Philosophy

**210 History of Jewish Philosophy in the Post-Maimonidean Period.** Spring term. Three credit hours. M W F 10:10. Mr. Ivry.

An analysis of the various currents within Jewish philosophy from the thirteenth to the sixteenth centuries, with emphasis upon parallel developments in Islamic and Christian thought of the period. The writings of such figures as Gersonides, Crescas, Albo, and Judah Abrabanel will be analyzed. All readings in English translation.

**404 Seminar in Jewish and Islamic Philosophy.** Spring term. Four credit hours. Th 2:30–4:30. Mr. Ivry.

This course will deal with the metaphysical and socio-political thought of Maimonides and of al-Farabi, a leading Muslim philosopher who exercised considerable influence upon Maimonides. The views of these two thinkers will be discussed against the background of Greek philosophy and medieval society. All readings in English. Prerequisites: Philosophy 100 or 101, or the consent of the instructor.

## Biblical Literature

**309 The Literature of the Old Testament.** Fall term. Credit four hours. Not open to freshmen. M W F 9:05. Mr. Rabinowitz.

Reading, in English translation, of the Pentateuch and Former Prophets, the pre-exilic Latter Prophets, and the Books of Psalms, Proverbs, and Job. The ancient Israelite beliefs and cultural assumptions necessary for the comprehension of the texts will be discussed.

**310 The Literature of Pre-Tannaitic Judaism.** Spring term. Credit four hours. Prerequisite: 309 or consent of the instructor. M W F 9:05. Mr. Rabinowitz. Readings, in English translation, of several Biblical books composed during the Hellenistic period, the apocryphal literature, and the Qumran Scrolls.

**401 Seminar: Ancient Israel's Theory of Literature.** Fall term. Credit four hours. Prerequisite: four semesters of college-level Hebrew, or consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

An attempt to establish the premises of a valid literary criticism of the Hebrew Scriptures.

**402 Seminar: The Book of Ezekiel.** Spring term. Credit four hours. Prerequisite four semesters of college-level Hebrew, or consent of the instructor. Hours to be arranged. Mr. Rabinowitz.

A study of the most important textual, redactional, and exegetical problems of the Book of Ezekiel.

**305–306 Studies in Christian Origins.** Throughout the year. First term not prerequisite to the second. Credit four hours a term. M W F 10:10. Mr. Carmichael.

The religious and moral ideas, customs, and conventions, which appear in the New Testament, will be traced in Old Testament and other Jewish writings.

**307–308 Biblical Law.** Throughout the year. First term not prerequisite to the second. Credit four hours a term. T Th 2:30–4:00. Mr. Carmichael.

A study of biblical laws, proverbs, and narratives, against the background of ancient Near Eastern law and custom.

## Modern Hebrew Literature

**241–242 Modern Hebrew Literature (1880–1914).** 241 fall term only; 242 spring term only. Credit four hours.

A survey of the Renaissance period in Modern Hebrew Literature, with discussion centered on the great poetry of the age and the new currents of thought on public affairs.

## Islamic Studies

**208 Classics of Islamic Literature.** Spring term. Credit three hours. M W F 11:15. Mr. Ivry.

A study of the culture and poetry of pre-Islamic Arabia, Muhammad and the Koran, and works of traditional and secular authors of the eighth to thirteenth centuries A.D. Students will be introduced, through readings in translation, to the diversified culture of the Islamic "Golden Age," which has set the standard for subsequent intellectual and cultural developments in the Muslim World. (This course is acceptable for fulfillment of one term of the Freshman Humanities requirement, and is open to all students.)

**205 The Rise and Development of Islam, 625–1258.** Fall term. Credit three hours. T 3:35–4:25, Th 2:30–4:25. Staff. The rise of the early Islamic community under Muhammad's leadership, and the development of that community into an Arab empire that dominated most of the Middle East, North Africa and parts of Europe, will be dealt with in this course. Emphasis will be placed on the evolution of Islamic culture from the time of Muhammad until the fall of Baghdad, 1258.

**405 Independent Study.** Either term. Credit two hours. For qualified students. Staff.

**406 Independent Study.** Either term. Credit four hours. For qualified students. Staff.

## Sociology

Mr. L. Reissman, Chairman; Messrs. H. A. Alker, P. Chi; Mrs. Rose Goldsen; Messrs. G. Gordon, D. P. Hayes, N. W. Henry, J. A. Kahl, W. W. Lambert; Ms. Judith L. Laws; Messrs. R. McGinnis, L. Meltzer, M. W. Meyer, M. P. Naditch, B. C. Rosen, C. A. Sheingold, G. F. Streib, J. M. Stycos, T. T. H. Wan, W. F. Whyte, R. M. Williams, Jr.

## Sociology Major

### General Sociology

A student majoring in sociology has considerable flexibility in prerequisites and in his major program. A student

thinking of majoring is advised to consult with the department early in his career, and well in advance of the deadline for selecting a major. By consulting early, he can select prerequisites appropriate to his major interests and career goals.

**Prerequisites:** Sociology 101 and one 200-level course in sociology or equivalents are required. In addition, the student should present two courses from the biosciences or from areas with a logical or symbolic content relevant to the social science. Among appropriate courses are: Mathematics 107–108 or 111; Philosophy 212 (Introduction to Logic); Linguistics 201–202 (Introduction to the Scientific Study of Language); Industrial and Labor Relations 210 (Statistics I); Biological Science 101–102 or 107–108; and Computer Science 201 or 202. Other courses may be recommended by a departmental adviser. Minimum grade requirements are an average of C in all subjects and an average of C+ in courses offered as prerequisites.

**Upperclass Courses:** A student accepted in the major must complete thirty-two hours of courses at the 300 level or higher, chosen in consultation with, and with the consent of, his adviser. Realizing the variety of other academic interests and career intentions to which sociology is relevant (for example, law, public service, medicine, and government) and which a major in sociology should serve, the Department wishes to allow each student and his adviser freedom to construct an appropriate sequence of courses. Students should, however, include among the thirty-two hours one course in the techniques of research (for example, Sociology 321, 325, 462 or Rural Sociology 320) and one course in theory (for example, Sociology 402, 385, or 441). For students intending to pursue graduate studies, additional courses in theory and methods may be recommended.

**Senior-Year Requirement:** All students will either (1) include within their thirty-two hours of advanced courses a graduate seminar during their senior year, writing for the seminar a comprehensive term paper, or (2) present to the Department during their last term of residence a substantial essay using empirical or library research.

### Special Programs

Within the general major, special programs or concentrations are available in social psychology, urban studies and population studies. The student in a special program generally takes from within the specialty area three or more courses at the 300 to 500 level and the graduate seminar (if he selects this form of fulfilling his senior requirement). Related areas of study are also suggested for each concentration.

**Concentration in Social Psychology.** This concentration is sponsored jointly with the Department of Psychology and most of the social psychology courses can be taken for credit in either sociology or psychology. Related specialties or areas which may be recommended to the student are social organization, social methodology, experimental psychology and cultural anthropology. A number of seminars (e.g. Soc. 489, 583, 585, 682, 684) will fulfill the senior seminar requirement.

**Concentration in Urban Studies.** In this strongly interdisciplinary concentration related courses may be recommended from population, social psychology, economics, government or planning. Many courses are within the Collège, but the student will be urged to consider also courses in the Colleges of Architecture, Art and Planning; Engineering; Human Ecology or Industrial and Labor Relations. Sociology 671 will fulfill the senior year requirement.

**Concentration in Population Studies.** Courses covering the basic demographic concerns of fertility, mortality and morbidity, migration, urbanization and population policy

and techniques of analysis are primarily within the Department, but students may be encouraged to take related courses in economics, planning and international studies. There are several courses at the 500 level which meet the senior year requirement.

### Social Relations Major

The major in social relations, which is sponsored jointly by the Departments of Sociology and Anthropology, provides the student with basic competence in cultural anthropology, social psychology, and sociology, while giving particular emphasis to the common methods of research in these disciplines. The student electing the major is expected to obtain a grasp of the common interests and evidence of these disciplines as well as knowledge of their unique insights in attempting to develop generalizations regarding man in society. The student's work is integrated in his senior year when he takes the social relations seminar in which he is expected to interrelate aspects of the theory and data of the three disciplines.

1. Prerequisites to the Major. The candidate must apply to the Committee on Admission to the Social Relations Major, offering the following: (a) Either Anthropology 101 or Sociology 101; (b) Either Psychology 101 or 102, or Human Development and Family Studies 115 or Sociology 281; and (c) Either Industrial and Labor Relations 210 or equivalent.
2. The Major. The major calls for a minimum of thirty-six hours of course work as follows: (a) Three pairs or other combinations of related courses at the 300 level or above, to be selected in consultation with the major adviser. These six courses must include two courses from each of the following disciplines: anthropology, social psychology, sociology; (b) At least one course in methods, to be selected from the following: anthropological methods, techniques of experimentation (psychology), methods in sociology, advanced psychological statistics, the philosophy of science or of social science, advanced statistics (such as Industrial and Labor Relations 311); (c) At least one course in theory which is related to social relations; (d) The senior seminar in social relations (Sociology 497, or Anthropology 495).

A list of the courses which may be used to satisfy the requirements for a major in social relations is available from any of the major advisers.

Students seeking admission to the program in social relations should apply to the Chairman of the Social Relations Committee, Mr. Williams.

### The Honors Program

For admission to the Honors Program, students should file application with the Department during the second semester of their junior year. Honors candidates must have a general average of at least B— and an average in departmental courses of at least B, or show exceptional promise.

### Distribution Requirement

The Distribution requirement in social sciences is satisfied in sociology by any two courses in the Department of Sociology.

### Seminars

Seminars may be taken by qualified undergraduates with the consent of the instructor, except as otherwise noted in course listings.



## Participation in Research

Participation in sociological research may be required as part of course work for any student when the instructor considers that it will be to the student's educational advantage.

### **101 Man in Society.** Fall term. Credit three hours.

M W F 11:15. Mr. Reissman.

An introduction to the principal concepts and perspectives of contemporary sociology. Course is organized around illustrative sociological research and offers experience with the data and techniques of the discipline.

### **Personality and Social Behavior (Psychology 102).**

### **230 Population Problems.** Spring term. Credit three hours. M W F 12:20. Mr. Stycos.

The practical and scientific significance of population growth and composition. Fertility, migration, and mortality in relation to social and cultural factors and in relation to questions of population policy. National and international data will receive approximately equal emphasis.

### **248 Politics in Society.** Fall term. Credit three hours.

T Th (S) 11:15. Mr. Sheingold.

An examination of the relations between the social and political structure with particular emphasis upon the U.S. Topics such as party systems, voting behavior, social movements, and power distribution will be discussed in this context.

### **262 Public Opinion.** Spring term. Credit three hours.

M W F 11:15. Mrs. Goldsen.

Factors determining the character of public opinion on the basis of relevant social, psychological, and political science knowledge. The nature, development, and control of public opinion in terms of opinion formation and change and the relation of public opinion to social and political action. The role of the communication media of radio, television, press, and motion pictures in determining public opinion. Students will be asked to participate in a field study examining opinion on a current issue of public interest.

### **264 Intergroup Relations: Social Conflict and Cooperation.** Spring term. Credit three hours.

Prerequisite: Sociology 101 or consent of the instructor. T Th S 11:15. Mr. Williams.

Analysis of relations among ethnic, racial, and religious groups. Sources of collective conflict and cooperation. Relation of conflict to social order and social change. The course reviews causes and consequences of prejudice and discrimination, as well as of cooperation and accommodation. Social and political movements stressing militance or intolerance, and efforts to resolve intergroup conflict, will be examined with special attention to current developments in the U.S. Attention will be given to strategies of confrontation and conflict resolution.

### **272 Urban Communities.** Spring term. Credit three hours.

Prerequisite: Sociology 101 or consent of the instructor. M W F 10:10. Mr. Reissman.

The study of urban aggregates as ecological, social, and cultural systems. The structure of urban communities will be studied both from the perspective of the larger, environing social and cultural system and from the perspective of internal relationships of institutions within the community. Patterns of community power structure and political participation will be examined within this context.

### **280 Social Influence Processes: Attitude and Behavior Change (Also Psychology 280).** Fall term. Credit three hours.

T Th 1:25-3:20. Mr. Regan.

This course is intended to provide an extensive review of the literature on social influence processes. Beginning with the effects of the mere presence of others on behavior, we will discuss theory and empirical research related to

conformity, compliance, imitation and modeling, group decision making, and attitude change. The relationship between attitudes and behavior will be examined in detail, and application will be made to naturally occurring social influence situations.

### **[281 Interpersonal Relations and Small Group (Also Psychology 281).** Spring term. Credit three hours.

Prerequisite: a course in psychology or sociology. M W F 9:05. Not offered in 1972-73.]

### **282 Social Psychology of Women (Also Psychology 282).** Fall term. Credit three hours.

Prerequisite: Sociology 101 or Psychology 101 or 102. M W F 2:30. Ms. Laws. Theories on women's personalities, roles and capacities are compared with current research evidence. Special attention is given to the structure of thinking regarding women in the social sciences. Topics include women in the labor force, marriage and the family, socialization of girl children, female sexuality, women's aspiration and achievement, and the Women's Liberation Movement.

### **284 Social-Psychological Theories and Applications (Also Psychology 284).** Spring term. Credit three hours.

T Th 10:10. Mr. Meltzer.

Students will read extensively in modern and classic attempts to explicate social and personal problems. The approaches of several theories—psychoanalytic, cognitive, behavioral, and role—will be considered in relation to topics such as personal rigidity, stigmata, conformity, prejudice, hysterical contagion, deviance, mental illness, conflict, intergroup relations, and social engineering. Lectures will evaluate these perspectives in terms of recent research. Not appropriate for students who have taken Psychology 102.

### **285 Personality and Social Systems (Also Psychology 285).** Fall term. Credit four hours.

M W F 10:10. Mr. Naditch.

A number of theories and conceptual approaches that have been used to understand the relationship between personality and social systems will be critically examined, including the cultural-configurational, psychoanalytic-cultural, behavioristic psychoanalytic, and social structural-functional approaches. A conceptual model of the interaction of personality and social systems will be developed. Emphasis will be on the relationship of individual and situational variables, and the role of cultural values in personality development.

### **321 Techniques of Sociological Research.** Fall term.

Credit four hours. Prerequisite: a course in sociology.

T Th 10:10 and laboratory time to be arranged. Mr. Hayes. The course will stress research design and the operational side of laboratory methodology with a series of field and laboratory projects. Students will carry out several studies from planning to analysis stages.

### **325 Foundations of Statistical Analysis.** Fall term.

Credit four hours. Prerequisite: Mathematics 107-108 or equivalent. M W F 11:15. Mr. Henry.

A first course in statistics for students in the social sciences. Basic principles of statistical inference will be stressed, including problems of point and interval estimation, hypothesis testing, and sampling theory. Non-parametric techniques applicable in social research and an introduction to linear regression analysis will also be included.

### **343 The Family.** Fall term. Credit four hours.

M W F 9:05. Mr. Streib.

The concern is with the structure and function of the nuclear and extended family in the West and cross-culturally. Specific areas which will be examined include biological foundations, incest taboos, mate selection, illegitimacy, sex and sexual controls, internal familial processes, disorganization, differential class patterns, the family and social change.

**[346 Introduction to Stratification.** Spring term. Credit four hours. Prerequisite: Sociology 101 or consent of the instructor. M W F 10:10. Not offered in 1972-73.]

**[350 Comparative Social Change.** Spring term. Credit four hours. Prerequisite: Sociology 101 or consent of the instructor. M W F 11:15. Mr. Rosen. Not offered in 1972-73.]

**[351 Sociology of Deviance.** Spring term. Credit four hours. Prerequisite: Sociology 101 or consent of the instructor. Not offered in 1972-73.]

**354 Religions and Secularism in Western Society.** Spring term. Credit four hours. Prerequisite: Sociology 101 or consent of the instructor. M W (F) 9:05. Mr. Streib. The interrelationship of culture, society, and religion. Religion and social stratification, religion and economic and political institutions, social change and religion. The major emphasis will be upon American society and American religious institutions.

**367 After the Revolution: Mexico and Cuba.** Spring term. Credit four hours. Prerequisite: two courses in the social sciences. M W F 1:25. Mr. Kahl. A comparison of the economic, political, and social development of Mexico and Cuba following their revolutions. Assigned readings will be in English.

**[368 Contemporary Brazil (Also Economics 368).** Spring term. Credit four hours. Prerequisite: two courses in the social sciences. M W 1:25-3:20. Messrs. Davis and Kahl. Not offered in 1972-73.]

**381 Social Psychology (Also Psychology 381).** Fall term. Credit four hours. Prerequisites: three hours of psychology and three hours of sociology. M W F 11:15. Ms. Laws. Analysis of the history, concepts, methods, and theories used to describe and conceptualize the ways in which people react to one another in social settings and in the laboratory. Students will work individually or as teams on projects, using experimental or other empirical methods. The topics for investigation in lectures and reading will include socialization, attitude change, communication, interpersonal influence, impression formation, leadership, and propaganda.

**385 Theories of Personality (Also Psychology 385).** Fall term. Credit four hours. Prerequisite: Psychology 101 or 102 or consent of the instructor. M W F 12:20. Mr. Lambert. A critical survey of the concept of personality in literature, the social sciences, and psychology. A number of the modern specialists will be discussed at some length, and recent empirical and experimental work that has grown out of their thought will be analyzed. The empirical relation of personality notions to some philosophical beliefs and literary productions will be considered. The emphasis will be mainly upon "normal" personality.

**387 Psychological Aspects of Political Behavior (Also Psychology 387).** Fall term. Credit four hours. Prerequisites: junior standing and a course in social psychology or personality, or consent of the instructor. M W F 2:30. Mr. Alker. A survey covering student activism, dogmatism, political paranoia, determinants of "left" and "right" ideology, Machiavellianism, autocratic vs. democratic leadership, need for power, group polarization and consensus, political socialization, and psychocultural theories of war. An empirical, hypothesis testing approach will be adopted.

**402 Social Theory.** Fall term. Credit four hours. Prerequisite: undergraduate major in sociology. M 1:25-3:20. Mr. Meyer. Survey of selected theories and concepts in contemporary sociology reviewed in historical perspective, in relation to the contributions of other social sciences, and in terms of present-day developments in theory and research.

Throughout, emphasis will be placed on trends in contemporary social theory.

**403 Sociology of Science and Technology.** Spring term. Credit four hours. Prerequisite: Upperclass or graduate student standing. W 1:25-3:20. Mr. Gordon. Examination of the relationship between the scientist and society, and of the effects of the scientist on society and of society on the scientist.

**420 Mathematical Sociology I.** Spring term. Credit four hours. Prerequisite: one year of college mathematics or consent of the instructor. F 1:25-3:20 and one hour to be arranged. Mr. McGinnis. Elementary mathematics as applied to sociological theory. Both deterministic and probabilistic models are considered. Stochastic probability processes are emphasized in relation to theories of social change.

**[421 Mathematical Sociology II.** Fall term. Credit four hours. Prerequisites: courses in calculus and probability or consent of the instructor. T Th (S) 11:15. Mr. Henry. Not offered in 1972-73.]

**[432 Special Problems in Quantitative Research.** Spring term. Credit four hours. Prerequisite: Sociology 230, a college course in statistics and a knowledge of the elements of computer programming, or consent of the instructor. Mr. Chi. Not offered in 1972-73.]

**433 Population and History (Also History 435).** Spring term. Credit four hours. Limited to upperclassmen and graduate students or by consent of an instructor. M 1:25-3:20. Messrs. Kaplan, Tavuchis and others. An examination of the impact of the methodology and findings of demography on historical scholarship and the implications of historical research for the study of population. After an introduction to demographic analysis, course will focus on the relationship of population to family and social structure, economic growth, political stability, health, manners and morals, etc. Will be taught as a seminar.

**434 Sociology of Human Fertility.** Spring term. Credit four hours. Prerequisite: Sociology 230 or consent of the instructor. W 3:35-5:30. Mr. Stycos. The course will review the major literature dealing with the social causation of variation in human fertility. Emphasis will be on international comparisons and on the methodology of field research.

**438 Human Migration.** Spring term. Credit four hours. Prerequisite: Sociology 230 or consent of the instructor. Offered alternate years. M 3:35-5:30. Mr. Chi. An analysis of international and internal migration as it affects the social and economic structure of societies and the groups in movement. Major theoretical and methodological investigations will be examined.

**441 Structure and Functioning of American Society—I.** Fall term. Credit four hours. Prerequisite: Sociology 101 or consent of the instructor. T Th (S) 9:05. Mr. Williams. Systematic analysis of the major institutions of kinship, stratification, economic activity, political structure, education, and religion. Special attention is given to values and their interrelations in the modern social order as well as to deviance and evasion. A survey of the more important types of groups and associations making up a pluralistic nation is included.

**442 Structure and Functioning of American Society—II.** Spring term. Credit four hours. Prerequisite: Sociology 441 or consent of the instructor. T Th (S) 9:05. Mr. Williams. Primary attention is directed to the study of interrelations of institutions, including analysis of the regulation of economic and political systems. Group cooperation and conflict are surveyed. Analysis of important processes of change in institutions, values, and social organizations.

**447 Sociology of Health and Medicine.** Fall term.

Credit four hours. Prerequisite: background in the social sciences, premedical status, or consent of the instructor. M W F 9:05. Mr. Wan.

An analysis of health, illness, and the health professions and institutions from the sociological perspective. Topics to be considered will include social epidemiology, health attitudes and behavior, the social psychology of illness, the socialization of health professionals, the organization of health care, and patient-professional relationships. Some attention will be directed to health and medical care in developing areas.

**462 Survey Research Methods.** Spring term. Credit four hours. Prerequisites: undergraduate major in sociology and Industrial and Labor Relations 210 or equivalent and consent of the instructor. Th 1:25-3:20 and additional time to be arranged. Mrs. Goldsen.

After intensive review of current survey methods, students will design and carry out field projects, singly or in small groups. Substantive areas for research will vary from year to year. In 1972-73 special emphasis will be directed to the mass media and public opinion.

**[472 International Urbanization.** Spring term. Credit four hours. Prerequisite: consent of the instructor. M 3:35-5:30 and one hour to be arranged. Not offered in 1972-73.]

**Individual Differences (Psychology 410).**

**480 Attitude Theory (Also Psychology 480).** Fall term. Credit four hours. Prerequisite: a course in social psychology. M W F 10:10. Mr. Meltzer.

A survey of theory and research on attitudes and attitude change. The cognitive consistency approaches (balance, dissonance, congruity) will be emphasized.

**481 Advanced Social Psychology (Also Psychology 481).** Spring term. Credit four hours. Prerequisite: a

course in social psychology or consent of the instructor. M W F 11:15. Mr. Regan.

Emphasis is on the empirical study of social psychological phenomena. Students will be introduced to empirical laboratory and field methods used in social psychology. Substantive problems will provide the focus for the demonstration and use of these techniques.

**[482 Social Psychological Aspects of Social Change (Also Psychology 482).** Spring term. Credit four hours. Prerequisites: two courses in psychology or sociology or consent of the instructor. T Th 2:30-4:00. Mr. Naditch. Not offered in 1972-73.]

**483 Social Interaction (Also Psychology 483).** Spring term. Credit four hours. Prerequisites: the consent of the instructor and three hours in psychology and three hours in sociology. Hours to be arranged. Mr. Hayes. A field and laboratory course dealing with the major dimensions of interpersonal perception and behavior. The relation of these dimensions to self-conception, social roles, group structure, and dynamics are examined. Contemporary research is stressed in the readings. Student projects are an integral part of the course.

**486 Socialization Processes and Social Context (Also Psychology 486).** Spring term. Credit four hours. Prerequisites: senior class or graduate student standing and consent of the instructor. T 1:25-3:20. Mr. Bronfenbrenner. The seminar examines critically existing theory and research on the influence of group structure and social roles on socialization processes in the family, peer group, neighborhood, and community. Particular attention is focused on the differential effect, if any, of different socializing agents, such as mother, father, older children, age mates, teachers, and other adults. Students are expected to work independently in preparing critical reviews of relevant research literature and developing designs for needed research.

**489 Seminar: Selected Topics in Social Psychology (Also Psychology 489).** Fall term. Credit four hours.

Prerequisites: consent of the instructor and three hours of psychology and three hours of social psychology or sociology. T 2:30-4:30. Mr. Jones.

A small discussion seminar dealing with issues in both social and personality psychology. Initial discussions will focus on specific areas of the field such as interpersonal evaluation, attitude change, and group processes. Subsequently, the discussions will become more general and raise such questions as: What are the major themes social psychologists are or should be studying? What are the appropriate units of analysis of social behavior?

**491 Selected Topics in Sociology.** Either term. Credit two hours. Open only to majors. Hours to be arranged. Staff.

**492 Selected Topics in Sociology.** Either term. Credit four hours. Open only to majors. Hours to be arranged. Staff.

**495 Honors Research: Senior Year.** Fall term. Credit four hours. Open only to students in sociology Honors Program. Hours to be arranged. Staff.

**496 Honors Thesis: Senior Year.** Spring term. Credit four hours. Prerequisite: Sociology 495. Hours to be arranged. Staff.

**497 Social Relations Seminar (Also Anthropology 495).**

Spring term. Credit four hours. Open only to seniors majoring in social relations. Hours to be arranged.

For complete descriptions of courses numbered 500 or above see the *Announcement of the Graduate School: Course Descriptions* or consult with the department.

**522 Philosophy of Social Research.** Fall term.

Credit four hours. Prerequisite: graduate student standing or consent of the instructor. W 3:35-5:30. Mr. McGinnis.

**524 Statistical Inference and Causal Analysis.** Spring term. Credit four hours. Prerequisite: a course in statistics or consent of the instructor. M Th 1:25-3:20. Mr. Henry.

**[526 Mathematics of Human Mobility.** Spring term. Credit four hours. Given in alternate years. Prerequisites: one year of college mathematics and one term of statistics, or consent of the instructor. F 3:35-5:30 and one hour to be arranged. Mr. McGinnis. Not offered in 1972-73.]

**528 Measurement and Latent Structure Theory.** Fall term. Credit four hours. Given in alternate years. Prerequisite: 524 or consent of the instructor. Hours to be arranged. Mr. Henry.

**530 Introduction to Social Demography.** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. M W F 10:10. Mr. Chi.

**[531 Demographic Theory.** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. T 1:25-3:20. Not offered in 1972-73.]

**535 Techniques of Demographic Analysis.** Spring term. Credit four hours. Prerequisite: Sociology 530 or consent of the instructor. M W F 10:10. Mr. Chi.

**[536 Demographic Research Methods.** Spring term. Credit four hours. Prerequisite: Sociology 530 or consent of the instructor. F 1:25-3:20 and one hour to be arranged. Not offered in 1972-73.]

**541 Social Organization and Change.** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. T 2:30-3:20, Th 1:25-3:20. Mr. Williams.

**548 Social Epidemiology.** Spring term. Credit four hours. Prerequisite: graduate student standing or con-

sent of the instructor. W 1:25–3:20 and a two hour laboratory to be arranged. Mr. Wan.

**Personality (Psychology 575–576).**

**580 Experimental Social Psychology (Also Psychology 580).** Either term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. Hours to be arranged. Mr. Regan.

**583 Proseminar in Social Psychology and Personality (Also Psychology 583).** Fall term. Credit four hours. Prerequisite: graduate major in social psychology or graduate minor in social psychology with consent of the instructor. M Th 4–5:45. Mr. Lambert and staff.

**585 Social Structure and Personality (Also Psychology 585).** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. W 3:35–5:30. Mr. Rosen.

**586–587 Interpersonal Interaction (Also Psychology 586–587).** Either term. Credit four hours. Prerequisite: consent of the instructor. Time to be arranged. Mr. Baldwin.

**642 Seminar: Comprehensive Health Planning (Also Business and Public Administration 465, Graduate School of Business and Public Administration, and Policy Planning and Regional Analysis 677, College of Architecture, Art, and Planning).** Spring term. Credit three hours. Prerequisite: graduate standing and consent of an instructor. Hours to be arranged. Messrs. Brown, Swift, and Wan.

**644 Seminar: Political Sociology.** Spring term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. Hours to be arranged. Mr. Sheingold.

**647 Seminar: Contemporary Research on Social Stratification.** Spring term. Credit four hours. Prerequisites: graduate student standing and consent of the instructor. Th 3:35–5:30. Mr. Kahl.

**659 Seminar: Sociology of Adulthood and Aging.** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. W 1:25–3:20. Mr. Streib.

**661 Research Seminar: Social Systems.** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of an instructor. Hours to be arranged. Messrs. Henry and McGinnis.

**662 Seminar: Special Topics in Systems Analysis.** Spring term. Credit four hours. Prerequisite: graduate student standing or consent of an instructor. Hours to be arranged. Staff.

**671 Seminar: Urbanization.** Fall term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. M 3:35–5:30. Mr. Reissman.

**Organizational Behavior II (Industrial and Labor Relations 521, School of Industrial and Labor Relations).**

**Cross-Cultural Studies of Work and Institutional Development (Industrial and Labor Relations 662, School of Industrial and Labor Relations).**

**682 Seminar: Social Psychology (Also Psychology 682).** Spring term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. Hours to be arranged. Mr. Meltzer.

**684 Seminar in Feminine Identity (Also Psychology 684).** Spring term. Credit four hours. Prerequisite: graduate student standing or consent of the instructor. Hours to be arranged. Ms. Laws.

**691–692 Directed Research.** Either term. Credit to be arranged. Hours to be arranged. Staff.

## Spanish

For complete course listings and for details of the major, see the heading "Spanish" in the section Modern Foreign Languages and Literatures.

## Theatre Arts

Mr. J. H. Clancy, Chairman; Mr. M. A. Carlson, Mrs. Joan Churchill; Messrs. R. Churchill, S. R. Cole, P. Curtis, D. Fredericksen; Miss Peggy Lawler, Mrs. LaVerne Light; Messrs. D. Marme, B. O. States, P. Stelzer, R. Sudre; Mrs. Renee Wadleigh; Mr. H. F. Wessler.

The Department of Theatre Arts offers a varied curriculum dealing with theatre and related arts. All majors must complete Theatre Arts 209 plus thirty additional hours of work in the Department with substantial work in three of the following four areas: (1) Technical Production and Design; (2) Acting; (3) Theatre History, Literature, and Theory; (4) Cinema. In addition, majors must complete at least twelve hours of related work outside the Department.

Opportunities for performance in theatre, dance, and cinematography are available to all members of the student body through the facilities of the Department. A wide variety of theatrical performances is presented each term in the University Theatre of Willard Straight Hall, the Kaufmann Auditorium in Goldwin Smith Hall, and the Drummond Studio in Lincoln Hall. Students may participate as actors, dancers, directors, playwrights, designers, or technicians. Auditions for particular productions are scheduled throughout the year.

Certain film making equipment and facilities are available to students through departmental courses or through The Independent Film Makers at Cornell.

Two prizes are offered under the auspices of the Department: the Heermans Prize for One-Act Plays on an American Theme (open to undergraduates), the George A. McCalmon Prize for One-Act Plays (open to graduates and undergraduates, with no restriction as to theme).

## Distribution Requirement

The Distribution requirement in the expressive arts is satisfied by any two of the three or four credit courses in the Department of Theatre Arts.

## Theatre Laboratory

Each of the following courses (251–252, 255–256) is offered throughout the year. Credit one hour a term. The courses may be repeated for credit, but no student may earn more than four hours of credit applicable towards graduation. Acting, directing, managerial, and technical responsibilities in productions of the University Theatre and/or studio and cinema programs under the direction of the University Theatre staff. Participation is also open to students without credit.

**251–252 Technical Theatre.** Credit one hour a term. S-U grades only. First meeting in Willard Straight Theatre at 7:30 p.m. on the first day of instruction. Shop hours to be arranged. Staff.

Practice in construction, painting, and lighting for the University Theatre productions.

**255–256 Rehearsal and Performance.** Credit one hour a term. S-U grades only. Credit for participation in producing the play (acting, directing, etc.) under faculty supervision. The student must be prepared to drop the course if he is not cast in a play (or employed on a production staff) for the semester in question.



## Acting

**280 First Year Acting.** Fall term. Credit three hours. Prerequisite: registration through departmental roster. M W 11:15-1:15; M W 2:30-4:25, T Th 11:15-1:15, T Th 2:30-4:25. Mr. Cole, Mr. Stelzer, and staff. Sections limited by number of students.

Introduction to the problems and basic technique of the actor. Practice in creative exercises, pantomime, improvisation, psychological sets, and physical images.

**281 First Year Acting.** Spring term. Credit three hours. First term prerequisite to second. Times as above. Continuation of Theatre Arts 280.

**380 Second Year Acting.** Fall term. Credit three hours. Prerequisite: Theatre Arts 280-281 and consent of instructor. Open to Theatre Arts majors only. T Th 2:30-4:25. Mr. Cole and Mr. Stelzer. Practical emphasis upon integration of conception, preparation of role and techniques of presentation.

**381 Second Year Acting.** Spring term. Credit three hours. First term prerequisite to second. Times as above. Continuation of Theatre Arts 380.

**480 Graduate Acting.** Both terms. Credit four hours. Primarily for M.F.A. candidates; open to others with consent of the instructor. May be repeated for credit. T Th 10:10-12:10; W 3:00-5:00 and F 9:30-11:30. Mr. Cole and Mr. Stelzer. The study and practice of fundamental and advanced techniques and methodology.

## Dance

The Dance Program is cosponsored by the Department of Theatre Arts and Women's Physical Education. Enrollment in Theatre Arts 282, 283, and 338 is done through the Theatre Arts office. Enrollment in all other courses must be done in Helen Newman Hall, the Women's Physical Education building.

Modern Dance 200, 201, 202 and 203 include a dance composition class and a music class, each of which meets once a week, plus enrollment in an Intermediate or Advanced Modern technique class. Students will be placed in Tuesday or Thursday music class after first class meeting, depending on their musical knowledge.

**200 Modern Dance.** Fall term. Credit three hours. Prerequisite: Intermediate technique level and consent of the instructor. Th 4:40 and T or Th 9:05. Modern technique classes to be arranged. Miss Lawler and Mr. Borden. Movement resources and short studies in basic elements of dance composition, and music resources for dancers.

**201 Modern Dance.** Spring term. Credit three hours. Prerequisite: Modern Dance 200. Th 4:40 and T or Th 9:05. Modern technique classes to be arranged. Miss Lawler and Mr. Borden. Short formal compositions primarily for solo figure, and music resources for dancers.

**202 Modern Dance.** Fall term. Credit three hours. Prerequisite: Modern Dance 201. W 7:30 p.m. and T or Th 9:05. Modern technique classes to be arranged. Mrs. Wadleigh and Mr. Borden. Problems in composition for groups, and music resources for dancers.

**203 Modern Dance.** Spring term. Credit three hours. Prerequisite: Modern Dance 202. W 7:30 p.m. and T or Th 9:05. Modern technique classes to be arranged. Mrs. Wadleigh and Mr. Borden. Further problems in composition for groups.

**204 Modern Dance.** Either term. Credit three hours. Prerequisite: Modern Dance 203. Hours to be arranged. Staff. Individual problems in composition.

**282 Dance and Movement for the Theatre.** Fall term. Credit three hours. May be repeated by M.F.A. candidates for credit. T 4:40 plus two technique classes per week to be arranged. Miss Lawler. Basic dance technique, improvisation and composition designed to help the actor improve his use of the body as an expressive instrument.

**283 Dance and Movement for the Theatre.** Spring term. Credit three hours. May be repeated by M.F.A. candidates for credit. First term prerequisite to the second. Times as above. Continuation of Theatre Arts 282.

**284 Period Dance.** Spring term. Credit two hours. Prerequisite: Beginning Ballet or Intermediate Modern technique. M W F 3:35. Miss Lawler. A sampling of the social dances from the Renaissance to the present with emphasis on pinpointing basic differences in movement styles and customs in the various periods.

**338 History of Dance.** Fall term. Credit three hours. M W F 3:35. Staff. A survey of the history of dance from ancient to contemporary times with emphasis on the development of theatrical forms in western civilization.

**285 Kinesthetics for the Theatre.** Fall term. Credit two hours. May be repeated by M.F.A. candidates for credit. Primarily for M.F.A. candidates; others by consent of the instructor. W F 12:00. Mr. Sudre. Flexibility and coordination exercises; posture and walk control; yoga as applied to theatre movement. Introduction to basic rules of body aesthetics, dietetics, physiotherapy as applied to the performing arts.

**286 Kinesthetics for the Theatre.** Spring term. Credit two hours. May be repeated by M.F.A. candidates for credit. First term prerequisite to the second. Time as above. Continuation of Theatre Arts 285 with introduction to techniques of weaponry, combat, and stage dueling.

**382 Voice and Speech for Performance.** Fall term. Credit two hours. Primarily for M.F.A. candidates; others with consent of instructor. M W 10:10 and laboratory to be arranged. Mrs. Light. A study of voice and speech variables and their nature when applied to theatrical performance. Emphasis is on ear training and the techniques of voice production to achieve precision of articulation, and to improve vocal range, resonance, and flexibility. Laboratory sessions under supervision of the instructor include programmed self-instruction in General American and English phonetics, and work on individual voice and articulation problems.

**383 Voice and Speech for Performance.** Spring term. Credit two hours. Prerequisite: Theatre Arts 382. M W 10:10 and laboratory to be arranged. Mrs. Light. Advanced voice and diction for the stage. Stage dialects studied through the combined approach of applied phonetics and ear training. Continued work in the techniques of voice production to improve range, resonance, and flexibility.

**482 Graduate Voice and Speech for Performance.** Fall term. Credit two hours. M.F.A. candidates only. M W 2:00 and laboratory to be arranged. Mrs. Light. Emphasis on vocal interpretation of roles. Application of special skills and vocal technique in building character.

**483 Graduate Voice and Speech for Performance.** Spring term. Credit two hours. Primarily for M.F.A. candidates. Times as above. Continuation of Theatre Arts 482.

**385 First Year American Mime.** Fall term. Credit two hours. M 2:00–4:00. Mr. Curtis and Mr. Wessler. The actor is taught to create and perform symbolic activities in the mime form. The first year's work is divided into acting, movement, and material.

**386 First Year American Mime.** Spring term. Credit two hours. First term prerequisite to the second. Time as above. Continuation of Theatre Arts 385.

**387 Second Year American Mime.** Fall term. Credit two hours. Primarily for M.F.A. candidates. Prerequisites: Theatre Arts 385, 386, and consent of the instructor. M 11:15–1:15. Mr. Curtis and Mr. Wessler. Continuation of Theatre Arts 385–386 with emphasis on directing, design, and creative imagination. Work is completed by the creating and playing of scenes.

**388 Second Year American Mime.** Spring term. Credit two hours. First term prerequisite to the second. Time as above. Continuation of Theatre Arts 387.

## Directing

**399 First Principles of Directing.** Fall term. Credit three hours. Prerequisite: one year of acting class. M W F 2:30–4:25. Mr. Clancy.

The study and practice of the fundamental craft of the director. The structure of visual and temporal patterns as interpretation of the script; rehearsal procedures and techniques; the relationship of the technical and design arts to the directorial approach. Lecture, discussion, demonstration, and practice. Students will prepare scenes for class critique, demonstration, and revision.

**498 Advanced Directing.** Spring term. Credit four hours. Prerequisites: Theatre Arts 399 or consent of the instructor. M W F 2:30–4:25. Mr. Clancy. Investigation of the theatrical meaning of a play and the methods by which such meaning may be communicated in the modern theatre. Discussion and studio practice.

**499 Projects in Directing.** Either term. Credit to be arranged. Prerequisite: consent of the departmental staff. Hours to be arranged. Staff. The planning and execution of directing projects by advanced students in the public facilities of the Theatre Arts Department.

**[599 Seminar in Theories of Directing.** Not offered in 1972–73.]

## Theatre Production and Design

**351 Theatre Practice.** Fall term. Credit two hours. Prerequisite: consent of the instructor. Hours to be arranged. Staff. Work on specific projects and/or productions under supervision of set designer, costume designer, or technical director.

**352 Theatre Practice.** Spring term. Credit two hours. Prerequisite: consent of the instructor. Times as above. Description as above.

**361 Stagecraft.** Either term. Credit four hours. M W 12:20. Laboratory hours to be arranged. Mr. Churchill. A survey of technical problems of stage production. Lectures and demonstrations on theatre structure and equipment, scene construction and painting, stage lighting and equipment, costume construction, and technical drawing. Practice in scene and costume construction, painting, and lighting in both laboratory and actual productions.

**362 Stage Lighting.** Spring term. Credit two hours. Prerequisite: Theatre Arts 361. T Th 11:15. Mr. Churchill. An introduction to lighting design for the theatre, beginning

with a basic foundation in the types and functions of the different lighting instruments, control equipment, light sources, and color, reflection and refraction problems. The course then acquaints the student with the principal approaches to lighting for a production, including the various design concepts and elements to be considered by the lighting designer.

**364 Stage Design I.** Fall term. Credit four hours. Prerequisite: Theatre Arts 361 or consent of the instructor. T Th 10:10. Laboratory to be arranged. Mrs. Churchill. Stage scenery design from the specifics of mass, space, and color to the completed theatrical design. Laboratory work with the designer in rendering, scene painting, basic drafting, decor, and lighting.

**365 Stage Design II.** Spring term. Credit four hours. Prerequisite: Stage Design I or consent of the instructor. T Th 10:10. Laboratory to be arranged. Mrs. Churchill. Continuation of Stage Design I.

**367 Costume Design I.** Fall term. Credit four hours. Prerequisite: consent of the instructor. T Th 12:20. Laboratory, M 2:00–4:25. Mr. Marme. Stage costume design and construction. Practice in costume design, period research, rendering techniques.

**368 Costume Design II.** Spring term. Credit four hours. Prerequisite: Costume Design I or consent of the instructor. T Th 12:20. Laboratory, M 2:00–4:25. Mr. Marme. Continuation of Costume Design I.

**467 Advanced Costume Design.** Either term. Credit and hours to be arranged. Prerequisite: consent of the instructor. Mr. Marme. Projects in stage costume design and rendering techniques. Emphasis on design of total production. May be repeated for credit.

**468 Advanced Costume Construction.** Either term. Credit and hours to be arranged. Prerequisite: consent of the instructor. Mr. Marme. Projects in application of historical patterning for the stage. May be repeated for credit.

## Playwriting

**348 Playwriting.** Fall term. Credit four hours. Prerequisite: consent of the instructor. M 1:25–4:25. Mr. States. A laboratory for the discussion of student plays. Each student is expected to write two or three one-act plays, or one full-length play.

**349 Advanced Playwriting.** Spring term. Credit four hours. Prerequisite: consent of the instructor. Time as above. Continuation of Theatre Arts 348.

## Theatre History, Literature, and Theory

**209 The Arts of the Theatre.** Fall term. Credit three hours. T Th 9:05 plus hour to be arranged. Mr. Carlson. A survey of the elements of drama and theatre intended to develop appreciation and rational enjoyment of the theatre in all its forms. This is not a production course, and no experience in theatre production is required. Lectures, readings, demonstrations.

**300 Independent Study.** Either term. Credit to be arranged. May be repeated for credit. Staff. Individual study of special topics. Open to juniors and seniors with consent of the departmental member directing the study.

**325 Classic and Renaissance Drama (Also Comparative Literature 325).** Fall term. Credit four hours. M W F 10:10. Mr. Carlson.

**326 European Drama, 1660 to 1900 (Also Comparative Literature 326).** Spring term. Credit four hours. M W F 9:05. Mr. Caputi.

**327 Modern Drama (Also Comparative Literature 327).** Spring term. Credit four hours. M W F 1:30. Mr. Kaufman.

**Introduction to Drama (English 241).**

**Shakespeare (English 243).**

**[Representative English Dramas (English 339).** Not offered in 1972-73.]

**Shakespeare (English 368).**

**Elizabethan and Jacobean Dramas (English 412).**

**Shakespeare (English 413).**

**Major Dramatists and Dramatic Forms (Comparative Literature 442).**

**Studies in Modern Drama (English 463).**

**Japanese Drama (Comparative Literature 377).** Readings in translation.

**Russian Theater and Drama (Russian Literature 332).** Readings in translation.

**Schiller's Dramas (German Literature 354).**

**Lessing (German Literature 530).**

**Goethe's *Faust* (German Literature 532).**

**Kleist (German Literature 533).**

**Nineteenth Century Drama (German Literature 536).**

**Racine (French Literature 462).**

**Theatre and Poetry of Paul Claudel (French Literature 496).**

**Seventeenth-Century Italian Theatre (Italian Literature 361).**

**Modern Theatre: Luigi Pirandello (Italian Literature 481).**

**Drama of the Spanish Golden Age (Spanish Literature 361).**

**The Post-Civil War Drama in Spain (Spanish Literature 392).**

**Eighteenth- and Nineteenth-Century Spanish Drama (Spanish Literature 481).**

**Greek and Roman Drama (Comparative Literature 400).**

**Roman Comedy (Classics 215).**

**333 History of the Theatre I.** Fall term. Credit four hours. M W F 11:15. Mr. Carlson.

A survey of the characteristics of primitive theatre and of theatrical styles and production modes in Classical Greece, Rome, Medieval Europe, India, China, and Japan, Renaissance England, and Spain.

**334 History of the Theatre II.** Spring term. Credit four hours. M W F 11:15. Mr. Carlson.

A survey of theatrical styles and production modes since 1642. Among the areas considered will be Renaissance France, the English Restoration, the eighteenth and nineteenth centuries in England, France, and Germany, and the modern international stage.

**335 American Drama and Theatre.** Fall term. Credit three hours. T Th 2:30. Staff.

A study of the American theatre and representative American plays with emphasis on the drama from O'Neill to the present.

**336 Theory of the Theatre.** Spring term. Credit four hours. M W F 1:25. Staff.

The development of the theory of the theatre in relation to theatrical practice.

**430 Literature and the Theatre.** Both terms. Credit four hours. M.F.A. candidates only. May be repeated for credit. M W 11:15. Mr. Clancy.

Analysis of various types of dramatic literature from the point of view of the theatrical medium.

**[433 Seminar in Theatre History.** Not offered in 1972-73.]

**500 Introduction to Research and Bibliography in Theatre Arts.** Fall term. Credit one hour. M 2:30. Mr. Carlson.

**536 Seminar in Dramatic Criticism.** Spring term. Credit four hours. Prerequisite: graduate standing or consent of the instructor. W 1:30-4:30. Mr. States.

**538 Seminar in Theatre Aesthetics.** Fall term. Credit four hours. Prerequisites: graduate standing and consent of the instructor. T 1:30-3:20. Mr. Clancy.  
A study of illusion and empathy in the theatre.

**690 Theses and Special Problems in Drama and the Theatre.**

## Cinema

**375 History of the Cinema I.** Fall term. Credit four hours. T Th 2:00-4:25. Mr. Fredericksen.

Within the context of the history of feature films, consideration is given to the problems of describing, interpreting, and evaluating films as works of art and as objects for mass consumption. Contemporary methods of analysis, e.g. semiology of the cinema, auteur theory, and genre analysis, are introduced. There is also some consideration of film as a business, and of the history of film theory. Lectures and screenings.

**376 History of the Cinema II.** Spring term. Credit four hours. T Th 2:00-4:25. Mr. Fredericksen.

An introduction to the history of documentary, experimental, and animated films. Within the history of documentary film, major figures covered include Vertov, Flaherty, Grierson, Lorentz, Riefenstahl, and the cinema-verite film makers. Experimental film is seen within the context of attempts to define the essence of filmic expression and of the film experience. The history of animated film emphasizes major figures such as Disney and Norman McLaren. Lectures and screenings.

**377 Fundamentals of Cinematography.** Fall term. Credit four hours. Prerequisite: consent of the instructor. Limited to twelve students. M W F 2:00-4:25. Mr. Fredericksen. The mechanics and expressive potentials of film making; sound considered in its nonsynchronous relationship to the image. Each student makes several short 16mm films.

**475 Seminar in the Cinema.** Spring term. Credit four hours. Prerequisite: consent of instructor. Limited to twelve students. Mr. Fredericksen.  
Intensive study of selected topics in film theory, aesthetics, criticism or history.

## Center for International Studies

Mr. M. J. Esman, Director; Mr. B. Robey, Executive Director

The Center coordinates and supports international studies at Cornell University and provides special support for new activities. The Center has been increasingly interested in developing interdisciplinary and comparative teaching and research at both the undergraduate and graduate levels.

A number of such activities have been introduced, including the Program on Participation and Labor Managed Systems, the International Population Program and the Rural Development Committee. The Peace Studies Program and Program on policies for Science and Technology in Developing Countries are jointly sponsored by CIS and Cornell's Program on Science, Technology and Society. A new program on comparative environmental studies is being jointly sponsored by CIS and the Water Resources

## 132 Program in Roman Civilization

and Marine Sciences Center. Courses which are developed through such programs are usually sponsored by the various departments of the colleges and schools at Cornell.

The Center offers undergraduate courses through the Undergraduate Interdisciplinary Program in International Studies. Present plans provide for the participation of more than one hundred students per semester. There will be one general topic each semester. Students will be divided into seminar groups of approximately twenty each, and each seminar will be taught by a professor in a different discipline. The instructors will switch several times during the semester so that all of the students will be exposed to all of the disciplines.

Further information on the Undergraduate Program and on specific courses and their applicability to Arts College requirements is available from the Center for International Studies, 217 Rand Hall. Students interested in the proposed International Studies Major should consult the director of the Undergraduate Program of the Center for International Studies.

Please refer to the *Announcements* of the various Cornell divisions for information about degree requirements. Additional information about the various programs and activities in international studies at Cornell is available from the Center for International Studies.

**CIS 211 Peasants, Power, and Productivity: Rural Development in the Third World.** Fall term. Credit four hours. Prerequisite: none. Hours to be arranged. Mr. Uphoff, government, Mr. Greenwood, anthropology, Mr. Levine, agricultural engineering, other instructors to be added.

An interdisciplinary course dealing with problems and strategies of rural development in Africa, Asia and Latin America. The conditions and potentiality of rural people will be considered—cultural and ecological “constraints,” traditional and modern techniques, land tenure and reform, economic exploitation and political power—as will be strategies for raising their power and productivity. Case studies of more and less successful experiments in rural development will be analyzed—from India, the Philippines, Taiwan, Mexico, Tanzania, and Ghana.

## Program in Greek Civilization

For a description of the Program see p. 22, under Special Programs. The following courses constitute the Program in Greek Civilization. When a course enrollment is large, students in the Program will meet in a small section. The Program taken as a whole satisfies all underclass requirements except the Distribution requirement in science. Taken separately the following sequences satisfy the following requirements: Classical Civilization 119 and 122 satisfy the Distribution requirement in the humanities; Classical Civilization 220 and Greek Civilization 212 satisfy the Distribution requirement in the social sciences; History 301 and Greek Civilization 210 satisfy the Distribution requirement in history. Alternatively, Classical Civilization 119 and 121 may be used toward satisfaction of the Freshman Seminars requirement.

**101–103, 201–203 Greek Language.** 101, 201 fall term; 103, 203 spring term. Credit three hours a term. The introduction to ancient Greek is designed to allow for the reading of important works beginning early in the second semester with Plato's *Euthyphro*. In the second year works will sometimes be chosen for simultaneous treatment in the language course, and in translation in another course so that contact with the original will allow a closer and fuller study of its meaning. The works chosen will vary from year to year, but will be drawn from such writers as Homer, Euripides, Plato, and Sophocles.

**Freshman Seminar in Greek Literature (Classical Civilization 119). Ancient Greek History (History 301).**

**Introduction to Classical Archaeology (Classical Civilization 220).**

**210 Greek Political Philosophy.** Fall term. Credit four or six hours as arranged. Hours to be arranged. Mr. Dannhauser.

The political philosophy of Plato and Aristotle. The course will consist of a close textual study of Plato's *Republic* and Aristotle's *Politics*. Among the questions to be articulated the following will be prominent: What is political philosophy? What is the best political order?

**212 Greek Science.** Fall term. Credit three hours. Open by consent of the instructors to freshmen, sophomores, and juniors. Hours to be arranged. Mr. Provine and Mr. Stokes.

Making extensive use of original sources, the students will trace the evolution of science from the early speculations of the Babylonians and Ionians through the mature philosophical systems of Plato and Aristotle and to its fragmentation into specialized sciences in the Hellenistic period. Particular attention will be paid to the kind of questions the Greeks asked of nature and to the metaphysical and mathematical instruments devised by them to find answers.

**214 Greek Philosophy.** Fall term. Credit three hours. Open by consent of the instructor to freshmen, sophomores, and juniors. Hours to be arranged. Mr. Stokes.

Dialectic: Plato's *Meno*, *Euthydemus*, and *Statesman* and Aristotle's *Topics*. The general theme will be the rise and flowering in Greece of Dialectic, the art of out-arguing an opponent. Beginning with the first Western philosophical arguments in the sixth century B.C., the course will take in the main argumentative techniques of Zeno the Eleatic, Socrates and his circle, Plato and his Academy, and the young Aristotle. The core of the subject is the work of the great philosophers, but some notice will be taken also of the early development of law-court argument. Particular attention will be paid, through close interpretation of the texts, to the relationship between the theory and the practice of argument.

## Program in Roman Civilization

For a general description of the Program see p. 23, under Special Programs. The courses listed below constitute the Program in Roman Civilization. The Program taken as a whole satisfies all underclass requirements except the Distribution requirement in science. Taken separately the following sequences satisfy the following requirements: Classical Civilization 119 and 120 satisfy either the Freshman Seminars requirement or the Distribution requirement in the humanities; Roman History and Roman Philosophy (Classics 211) satisfy the Distribution requirement in history.

**105, 106, 108, 201, 202, 205, 206 Latin Language.** 105, 108, 201, 205 fall term; 106, 202, 206 spring term. The elementary courses (105, 106), for those who have no previous knowledge of Latin, are designed to achieve the reading of interesting original works beginning in the second semester. Students with some knowledge of Latin are placed in more advanced courses, according to the results of a Classics Department Placement Examination (see p. 58). The works taught in any given course may vary from year to year, but will include a range of the best Latin poets and prose writers. The main stress in reading will be on literary aspects of the works assigned.

**Freshman Seminars in Greek and Roman Civilization (Classics 119 and 120).**

**Roman History (History 302).**



**[Roman Philosophy (Classics 211).** Fall Term. Not offered in 1972-73.]

**[Roman Art and Archaeology (Classics 213).** Spring Term. Not offered in 1972-73.]

## Latin American Studies

The Latin American Studies Program constitutes a minor field of concentration for graduate students. The Program's major purpose is the encouragement and coordination of faculty and student interests on Latin America. Special lectures, films, and seminars are sponsored by the Program in order to supplement the regular course offerings. Although the Program operates primarily for graduate students, many courses are open to undergraduates, and the possibility exists for the undergraduate to arrange a Latin American concentration in conjunction with an independent major.

In addition to Spanish, Portuguese, and Quechua courses, Latin American area courses offered by the College of Arts and Sciences include:

- Ethnology of South America (Anthropology 332).**
- Ethnology of The Andean Regions (Anthropology 333).**
- Comparative Civilizations (Anthropology 350).**
- Archaeology of the Americas I (Anthropology 354).**
- Archaeology of the Americas II (Anthropology 355).**
- Mesoamerican Thought and Culture (Anthropology 356).**
- Ethnohistory (Anthropology 418).**
- Tribal People (Anthropology 532).**
- Andean Research (Anthropology 533).**
- Economic History of Latin America (Economics 325-525).**
- Economic Problems of Latin America (Economics 565).**
- Imperialism (Government 337).**
- Government and Politics of Latin America (Government 340).**
- Research Seminar on the U.S. Presence in Latin America (Government 578).**
- Pre-Columbian Art (History of Art 315).**
- Latin American Art (History of Art 392).**
- Seminar in Pre-Columbian Art (History of Art 415).**
- Seminar in Latin American Art (History of Art 510).**
- The Colonial Experience in Latin America (Latin American History 319).**
- Latin American History in the Nineteenth and Twentieth Centuries (Latin American History 320).**
- Seminar in Slavery and Abolition in the Americas (Latin American History 487).**
- Seminar in the History of Brazil (Latin American History 488).**
- Seminar in Latin American History (Latin American History 489).**
- Seminar in Latin American History (Latin American History 687).**
- Seminar in Latin American History (Latin American History 688).**
- Population Problems (Sociology 230).**
- After the Revolution: Mexico and Cuba (Sociology 367).**
- Introduction to Social Demography (Sociology 530).**
- Permanence and Revolution in Twentieth Century Spanish American Prose Fiction (Spanish 105).**

**Spanish American Short Story (Spanish 334).**

**History of the Spanish Language (Spanish 401).**

**The Grammatical Structure of Spanish (Spanish 403).**

**Spanish American Literature From Discovery to Independence (Spanish 426).**

**Linguistic Structures of Ibero-Romance (Spanish 501).**

**Graduate Seminar in Spanish American Literature: Carpenter (Spanish 536).**

**Seminar in Ibero-Romance Linguistics (Spanish 600).**

Other Latin American area courses are offered in the College of Agriculture; the College of Architecture, Art and Planning; the College of Human Ecology and the School of Industrial and Labor Relations.

For more detailed information concerning courses and other activities, contact the Latin American Studies Program office, 205 Rand Hall.

## Program on Science, Technology, and Society

F. A. Long, director; R. Bowers, deputy director; Philip L. Bereano, executive secretary.

The purpose of the interdisciplinary Program on Science, Technology, and Society is to stimulate teaching and research on the interaction of science and technology with contemporary society. The Program has initiated a number of new research and teaching efforts and also plays a role in providing coherence and support to activities in this area which are already proceeding at the University.

The topics of concern to the Program are illustrated by the following examples: science, technology, and national defense; world population and food resources; legal and moral implications of modern biology and medicine; national policy for the development of science; sociology of science; and the ecological impact of developing technology.

The mechanisms for studying these problems will vary and will probably include courses, seminars, short workshops, and summer studies as well as individual research programs. The Program welcomes the participation of students and faculty from all colleges and schools. A list of relevant courses in all parts of the University may be obtained from the Program Office, 628 Clark Hall (telephone 607-256-3810).

The Program sponsors the following courses jointly with other units of the University.

**Biology and Society (Biology 201-202).**

**Special Topics in Social Biology (Biology 203-204).**

**Social Implications of Technology (Engineering 205).**

**The Law and Environmental Control (Engineering 2605).**

**Technology Assessment (Engineering 2606).**

**The Impact and Control of Technological Change (Economics 302).**

**Impact of Technology on Defense and Disarmament Policies (Government 515).**

**Science, Technology and Development (Government 561/BPA 539).**

**[Science, Technology, and International Relations (Government 561/B&PA 640).** Not offered 1972-73.]

**Science, Technology, and Law (Law 525).**

**Urban Politics (Government 312).**

**American Urban Policy (Government 512).**

**Sociology of Science and Technology (Sociology 403).**

## Society for the Humanities

Henry Guerlac, Director.

The Society awards annual fellowships for research in the humanities in three categories: Senior Visiting Fellowships, Faculty Fellowships, Junior Postdoctoral Fellowships. The Fellows offer, in line with their research, informal seminars intended to be off the beaten track. Details about these seminars are circulated to interested departments.

Membership in the Society's seminars is open, upon special application, to graduate students and suitably qualified undergraduates. The College determines if a seminar may be taken for credit (see below). There are no examinations; only S-U grades are given; and it is at the discretion of the Fellow whether to require only oral reports, or, in addition, a research paper if credit is to be obtained. All seminars are held in the Society's house at 308 Wait Avenue. Persons other than those officially enrolled may attend as visitors, if specifically invited.

Unlike other courses, the Society's seminars begin the second week of each semester. A student wishing to attend any of these seminars should telephone the Secretary of the Society (256-4086) early in the first week of term to arrange a short interview with the Fellow offering the course. Students wishing credit for the course must formally register for it in their own College.

Seminars offered in 1972-73 will include:

### **413 Seminar on Law in Traditional Chinese Society.**

Fall term. Credit four hours. W 1:45-3:30. Open, upon special application, to graduate students and suitably qualified undergraduates. Mrs. Chen. Students with knowledge of classical or modern Chinese will be guided in reading primary sources on various subjects relating to the role of law in traditional Chinese society. Imperial and local regulations, government manuals, clan rules, civil and criminal cases, legal commentaries, and essays dealing with social problems will be subjected to close scrutiny. The topic and the period covered depends largely on each individual's interest.

### **414 Seminar on Law and Society in Imperial China.**

Spring term. Credit four hours. W 1:45-3:30. Open, upon special application, to graduate students and suitably qualified undergraduates. Mrs. Chen.

This seminar will treat such topics as the village and the family, informal dispute settlement, Confucianism of law; the legal profession, the status of women, slavery, sumptuary regulations, local control of petty criminals, and the treatment of foreigners. Ability to read Chinese is not required; besides reading assignments in English in various books and articles, translated source materials will be supplied by the instructor.

## Student-Initiated Courses

The student's academic experience at Cornell is by no means confined to the classroom, or to what he will learn in the formally organized and conducted courses that he takes for credit. Students are encouraged, individually and in groups, to plan and to organize independent courses of study, of varying degrees of formality, with and without the advice or guidance of faculty members, on a noncredit basis. One purpose of a formal four-course load (in junior and senior years) is, precisely, to give students greater freedom to pursue their own intellectual inclinations.

Sometimes the proposed, student-initiated course of study may be so ambitious that it is unfeasible unless it can be taken for credit. Almost all departments already list courses designated as "independent study," "supervised reading," or "independent research," which may serve this purpose. In addition, the College encourages students to initiate proposals for new courses or modes of instruction which are not currently offered in the College, or elsewhere in the University. If such a proposed course falls within the jurisdiction of a particular department, the student should seek the advice of a faculty member in the department or of the chairman. If an interdisciplinary course is being considered, the student may seek the assistance of the Agency for Educational Innovation, established by the University Senate. The Agency is prepared to help students plan and organize innovative projects of all kinds. The Educational Policy Committee of the College must approve any course which is to count for academic credit.

For further information, students should consult with the Dean's Office, 159 Goldwin Smith Hall.

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1972-73

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Professors-at-Large are distinguished nonresident members of the University faculty. During short visits to the campus, of up to a month's duration, made at irregular intervals, they hold seminars, give public lectures, and consult informally with students and faculty.

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Jacques Dreze  
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Manfred Eigen  
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\* Numbers following names indicate: (1) leave of absence, fall term, 1972-73; (2) leave of absence, spring term, 1972-73; (3) leave of absence, 1972-73.

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